

AVIATION WEEK

FEB. 7, 1949

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AVIATION WEEK, February 7, 1967

Freedomline Problem

Freedomline may take cautious looks at Douglas's Super DC-9s, but their short-term freedomline seems likely to prevent them from becoming customer-favorites for the present, at least.

The freedomline now operates about 50 DC-9s. Unless their temporary certificate is extended, all of the freedomline will be out of business by January, 1967—nearly two years before extensive changes would be required on DC-9s to meet the higher performance standards of the transport category.

Money Men

First Vice Sen. Elmer Thomas (D., Ohio) is under heavy pressure from agricultural interests to slash national defense expenditures—so there would be more funds available for farm support subsidies.

Thomas is chairman of the Senate Appropriations subcommittee on the armed services which will consider Air Force, Navy and Army budgets for this coming year.

Other Democrats on the subcommittee with a big voice in deciding whether funds should be allowed for the 70-Crop USAF program are Sen. Carl Hayden (Ariz.), Sen. Richard Russell (Ga.), Sen. Joseph O'Rourke (W.Va.), Sen. Dennis Chavez (N.M.), Sen. Pat McCarran (Nev.), Sen. Russell Long (La.), Sen. John McClellan (Ark.) and Sen. A. Willis Robertson (Va.).

The Republican senators are Sen. John C. Stennis (Miss.), Sen. Styles Bridges (N.H.), Sen. Charles McNair (Ind.), Sen. Howard Callahan (Neb.), Sen. Kenneth Wherry (Nebr.), Sen. Guy Carson (Iowa), Sen. Everett S. Sells (Mass.)

Commerce Shift

Trans' Rep. Lindsay Borenworth (D.) is slated to become top man on aviation matters on the House Aviation and Foreign Commerce Committee.

Rep. Alfred Ruliffe (D., N.C.) first in line for the chairmanship of the Aviation subcommittee, has been hospitalized for sometime and his health probably will not permit him to be active on the Capital Hill over the coming months. In view of this, House Aviation's chairman, Rep. Robert

End of Probe

Big exposure of the Senate Investigating Committee's monthly annual report is that it makes no mention of airline subsidies.

The committee staff has been investigating the matter since last spring.

The probe was launched with fanfare by the group's co-chairman, Sen. Howard Ferguson (R., Mich.) who announced at the time that he intended to disclose the extent to which airlines have obtained CAB route awards that have resulted in alleged subsidy made on the U.S. Treasury.

Committee Counsel Francis Flanagan reports that the staff's findings on airline subsidies are being turned over to Sen. Clyde Hoover (D., N.C.), successor to Ferguson in the chairmanship. Hoover is expected to file the material and that the cabinet director.

Cramer (D., Ohio) plans to appoint Belkovich as chairman, and Borenworth as co-chairman.

Airline Support

Washington's airline supports feel a public airing of their financial difficulties is proposed by Senate Interstate and Foreign Commerce Committee's chairman, Sen. Edwin Johnson (D., Colo.)—would be a basis to airlines seeking small per mile increases from the Civil Aeronautics Board.

It could help to create a favorable congressional and public background for CAB hearings.

Committee members, generally, are sympathetic to the airlines' position—particularly Johnson, Sen. Warren Magnuson (D., Wash.), Sen. Lucien Johnson (D., Tex.), Sen. Owen Brewster (R., Me.).

Airline representatives looking with interest on the probe suggested by Johnson point to the big congressional appropriations for airports facilities that have resulted from the Senate committee's air safety investigations of a few years ago that opened over to the aid for the airlines.

Symington's Tip

Air Force Secretary W. Stuart Symington gave Washington's airplane a tip on how the National Military Establishment splits its budget dollars.

Washington observes how long felt that the policy of Defense Secretary Forrestal was to split the budget into three equal shares regardless of the past years indicated by several defense strategy. Rep. Carl Vinson (D., Ga.) chairman of the House Armed Services Committee asked Symington what the Air Force would do if given the \$500 million now budgeted for national military training.

Symington answered "Well, with one-third of \$500."

"I'm not talking about one-third, I mean all of it," Vinson interrupted. But the press table caught Symington's wilyly evasive point.

Last year Forrestal testified that to increase the Air Force to 76 groups would cost \$12 billion because both the Army and Navy would have to get a boost equal to the Air Force increase.

Reserve Shopup

As predicted in Aviation Week last Nov. 21, the appointment of Lt. Gen. Elwood R. (Pete) Quesada as head of the USAF reserve program is producing a shaking in the Air Reserve program.

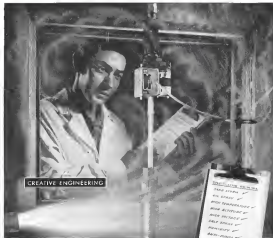
Details of the Quesada program will probably not be announced until next summer but basic change is noted at once intensive flight training with acceleration in total number to be trained. Quesada is also looking to be based by study means of merging Air National Guard with USAF Reserve. This would also increase the size, organization and training requirements of the new merged Air Reserve component.

Airports, Plans Rise

In the midst of reorganization huddle (Aviation Week, Jan. 31), Civil Aeronautics Administration took time out to report some facts.

According to CAB, the U.S. had 545 airports and 95,907 airfield acres at the beginning of 1965.

Airports total was an increase of 655 over the total reported at the beginning of 1964, and the amount figure showed an increase of 1176 over figure reported at the beginning of 1963.



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NEWS DIGEST

DOMESTIC

Cost almost shipments fell to \$17, ended at \$5,578,251 in November, a drop of 37 percent in October and 18 percent in value from October. Census Bureau reports. In same month, civil aircraft engine shipments were 795, and value of engines and parts was \$5,179, 443, an increase of 13 percent in value but decrease of 12 percent in number. November transport plane backlog was 182, compared to 199 in January, 1948.

Post of New York Authority and airlines serving New York, but not all, will be holding meetings in an attempt to settle the Idlewild dispute.

Adrian M. Rabinovitch, assistant director of aeromedical research, National Advisory Committee for Aeronautics, was elected vice president of the Society of Automotive Engineers representing aircraft powerplant activity.

Robert V. Hirt, who recently accepted as vice president, Douglas Aircraft Co., joined John C. Nicks, Harley D. Sloan, retired public aviators, as resident partner in Los Angeles.

FINANCIAL

Air America, Inc. reports net profit of \$5464 for quarter ended Dec. 31, 1948, on sales of \$3,457,240, and after provision of \$2580 for federal provisions. On sales of \$1,604,578 in the corresponding period of the preceding year the company lost \$29,954.

Tenn Engineering & Mfg. Co. reports first 1948 figures to show sales in excess of 90 million, rather than \$4.5 million as previously reported, and a net income "substantially" above the 1947 net of \$576,000 reported as the 1947 income figure in *AVIATION WEEK*, Jan. 15.

Morano Mfg. Co. reported to Boeing and Exchange Commission sales of \$92,741 for the three months ended Dec. 31, 1948. Operations continue at a profit, according to President Henry F. Nelson.

FOREIGN

Britain has contributed nearly \$15 million to the cost of the Berlin airlift, according to Undersecretary for Foreign Affairs Christopher Mayhew.

International Air Traffic authorities closed the same level in November as in October, it is indicated by the transactions just through the IATA clearing house in London. November transactions totaled \$13,442,000, roughly the same as in the preceding month.

INDUSTRY OBSERVER

New version of the Bell X-1 will be capable of hitting Mach 2.94 and a speed of 1550 mph, above the 1500 mph of the X-1. President of Bell Aircraft Corp. Thayer Brown of the X-1 has set a top speed of 1000 mph, which is Mach 1.5 above 35,000 ft. The four new models of the X-1 now under construction at Bell's Muroc Field plant will have a 50 percent increase in fuel capacity. Meanwhile Capt. Charles Yeager, first supersonic pilot of the X-1, confirmed the fact that the X-1 has flown above 50,000 ft.

Marine Helicopter Development Squadron at Quantico is scheduled to get a new version of the Sikorski HO4C from rotor transport helicopter. The new version, which will probably be designated HO4C-2, will feature an all metal monocoque fuselage instead of the steel tube and fabric construction of the HO4C-1. The all-metal fuselage is expected to eliminate most of the vibration now experienced in the HO4C.

Airplane division of Cessna-Wright Corp. was given a \$5 million contract to reconvert 100 USAF Cessna 441-60 twin engine biplane. The planes are now in storage at Walnut Ridge, Ark. Another 100 C-41s will be reconverted by General Central Airport Co., Glendale, Calif., under a \$2.5 million contract. Cessna-Wright Airplane division is also working on piston models.

Research of interest in use of JATO on four-engine transports to overcome engine limitations is indicated by CAA tests just completed in the South American Andes for Brazil. At La Paz, which has a divergent terrain and elevation of 10,393 ft, tests are made with a DC-4 to determine what proportion of actual payload weight be retained in using JATO at the La Paz Field.

North American has secured military approval to modify part of its second order for B-45s to provide a new wing with greater fuel capacity to stretch the range of the four jet medium bomber. Company has taken over Los Angeles Airport hangar used by Pan American as an intermediate depot and some will begin static tests on the new wing. PAA will move into the cluster of other airline ticket offices on north side of airport.

Northrop is meeting representatives of its belief that modification of 14 piston engines to fit Flying Wing bombers to jet power is not affected by the B-45 jet wing bomber contract cancellation, although the modification authority was supplemental to the 49 contract. Work on the modification is proceeding pending a final decision. "Several months" will be required for testing up before the company can begin production of its specially approved order for 48 B-45 two-place all weather twin-engine fighters of new prototype units for test flight, and the second one is being completed.

North American Aviation will manufacture in 7-10 military orders at the company's Los Angeles Airport facility instead of in Denver, Colo., as planned originally. Production program calls for completion of first test unit by July 15 and completion of the first flying aircraft by Sept. 2.

United Helicopter production schedule for the "Hiller 350" calls for one each working day beginning in May.

Cessna closed its commercial production year with 106 Cessna-Livest delivered during 1948. A backlog of 12 transports remained for delivery this year. Company is hopeful of increasing this figure substantially through new orders through operation of subsidiary sales agency which will finance transport purchases. At last inquiry financing firms had not crystallized, and to this may be attributed Cessna's to get some potentially lost prospects on the dotted line as firm buyers.

Crosser exhaust system developed by Piper and Loening engineers for use on the four cylinder 117 hp. powerplant on the new four-place Piper Clipper is set to add approximately 7 hp. at static rpm through more effective scavenging of exhaust gases. Two cross-over tubes connect the exhaust ports of the front cylinders and the ports of the back cylinders. Front and rear exhausts are then piped to the muffler remote from the rest of the engine.

How Congress Plans to Boost Air Force

Authorization for 70-Group strength first move; UNT fund diversion comes next

Congressional strategy for boosting U. S. Air Force funds in the fiscal 1950 budget embodied on Capitol Hill last week.

Typical acts in opening hearings on the 70-Group USAF bill before the House Armed Services Committee headed by Rep. Carl A. Vanden (D. Cal.).

• **Compare Plans**—Here is what Congressmen leaders plan:
• First the House-Stafford bill authorizing 65, permanent strength of the regular U. S. Air Force at 70 groups plus 22 special squadrons and support air materiel components.

• House 9466 bill, now considered in the fiscal 1950 budget for Universal Military Training to USAF. This would boost USAF strength from the 48 combat groups now required by the budget to 57 groups and add \$195 million to the \$1.04 billion now earmarked for procurement of new aircraft in the fiscal 1950 budget. This would provide a total of \$2.75 billion for new aircraft

in fiscal 1950 compared with \$1.04 in last year's second peace-time support appropriation.

• **Logic Next**—Armed at the level called for in the fiscal 1950 budget—a 50 percent cut from 14,900 planes total to 7500 planes and a percentage cut from \$715 million and \$165 planes in fiscal 1949 to \$693 million and \$10 planes this year.

• **Rebuke Congress**—This program has the strong backing of the House Armed Services Committee and its powerful leader, Vanden. It has also been tacitly approved by House Speaker Sam Rayburn (D. Tex.), with the comment: "Vandens really gets what he wants up here."

President Truman is not expected to make a vigorous fight against this congressional action because it does not involve the breaking of his defense budget ceiling. The powerful bloc of southern Democrats who are opposing the fight for as power on the Hill this year are also needed as the Truman camp to pass the various

key bills included in Truman's "first class" program.

If the \$508 million now earmarked for UNT is diverted to USAF it will mean a boost in plane procurement from the 1609 now authorized in the fiscal 1950 budget to 3579—an increase of 782 planes. This is about the same number of planes USAF bought under fiscal 1949 authorization.

• **Third Program**—To help USAF save \$400 million short of the \$1.7 billion in procurement funds required to fully implement the second step in the five-year expansion program began last year. Vanden indicated that he would favor shifting the five-year program not to a seven year program which would bring USAF up to full strength of 70 regular groups equipped with parts and aircraft parts in 1954 instead of the 1953 goal toward which USAF is now moving.

The House committee hearings were framed by the testimony of Air Secretary W. Stuart Symington, who once again stated his firm belief in the 70 Group Regular Air Force as the maximum military requirement for national defense regardless of the international situation.

Symington made it quite clear that as a member of the Truman administration he is supporting the President's budget with its shift of the USAF to 45 combat groups because "they have more about the overall picture than we do."

Vanden's comment on Symington's testimony was:

"This makes the case clear. If we had the money you would support what you consider the maximum requirement—a 70 Group program."

• **Some Droppings**—Speculation at the hearing, when Symington testified, was made it during discussion of the 70-Group program were disappointed, but informed attendees believe that Symington's new strategy will get more concrete results for USAF than a public fight at the Truman administration as the air power issue. The testimony left no doubt among observers that Symington intends to stay on as Secretary of the Air Force as the new Truman administration.

Both military industry spokesmen and congressional strategists agreed that the fight for air power can be carried on more effectively by having a man of

Symington's stature within the administration backed by the vocal support of air power exponents both in Congress and outside the government.

• **Stick High**—Folded observers also note that Symington's present standing within the new Truman administration is high. He strongly preceded over a transitional director to Vice President Alben Barkley as New York. Among these years at a recent portrait presentation in Washington, Symington, Presidential aide, Clark Clifford, Secretary of the Treasury James Snyder and Senate Leader William L. Dyer I, all present in their administration roles.

Clifford highlights at Symington's testimony:

• **Provision of four B-36 groups** in the Strategic Air Command.
• **Boosting long range plane** plans as a result of a new group to a total of six groups and reducing the medium bomb groups (B-50 and B-54) to one group.

Elimination of the defense knowledge requirements in the Veterans' Group bill. This would state USAF authorities in number of planes only, leaving USAF to have better plans without taking its strength. He originally wanted the bill called for strength of 74,000 planes or 215,000 airplanes less leaving it to the secretary to decide which standard to apply.

Boost Carrier Cost

Latest Navy estimates indicate that the cost of an \$1,000,000 supercarrier (CVA-58) will be close to a quarter billion dollars.

This breaks down into \$452 million for the carrier (original estimate was \$124 million); \$107 million for anti-aircraft, radar, etc., and approximately \$50 million for the air groups to be put aboard the carrier. Work on the carrier has begun at Newport News, Va., with completion scheduled for 1953.

Navy has no firm estimate for the air groups since their composition will differ radically from as units are used aboard the big carriers. Larger and more expensive jet and composite powered planes such as the North American AJ-1, Grumman F7U and Douglas F4D will force the carrier air groups of the future. Cost on air group for a Midway class (45,000 tons) carrier, largest now in service, is about \$14 million with about a 50 percent price increase indicated for the super-carrier's planes.



Curtiss-Wright Changes Continue

Vice Presidents Wright and Kennedy retire; Vaughan leaves for Europe; four new directors are elected.

Reorganization of Curtiss-Wright Corp. top management ended leadership of Paul Shields, new chairman of the executive committee, took place last week.

Changes included election of four new directors and retirement of two vice presidents. The withdrawal of Guy Vaughan, former president, was also one of the board, from some previous year in company affairs is expected to follow.

Added to the board are John A. McCone, West Coast industrialist and former member of the President's Air Policy Commission, Henry S. Stringer, president, First National Bank of New York, J. F. McCarthy, Curtiss-Wright attorney, and T. Andrew Bower.

• **Ret. Director**—Bower led a dissenting group's attack on the management at last year's annual meeting of stockholders. He pressed for management change and a special \$7 each dividend paid due to common stock but was defeated in a 99 percent vote. Later the company paid a \$7 each dividend on common shares.

The retiring vice presidents are Bartlett S. Wright and William D. Kennedy, who both served 20 years service with the company or in the firm. Wright was vice president and general manager of the company's Airline Division during the war, and a former director. More recently he was attached to the Washington office. Kennedy is a former vice president and general manager of Wright's Aeronautical Corp., Curtiss-Wright subsidiary.

• **Vaughan**—About 25 years change were announced after the month's meeting of the Curtiss-Wright board in New York City, but there was no official comment on Vaughan's place in the picture. The board chairman left quietly for England the week before the meeting. The company did not disclose the exact nature of the trip, but sources there said it was as much for retirement as anything else.

His part in company affairs has been declining for some time, and the trip abroad was expected to hasten departure to his last official act for Curtiss-Wright, to be followed by his attendance under an attractive pension agreement.

Both Bartlett Wright and William Kennedy were Vaughan opponents. Recognition as secretary of Mrs. Julia M. Seaton, another close associate of Vaughan as the management of the company, was announced a few weeks ago. Vaughan was succeeded in the presidency last December by William C. Jackson, chairman Wright, Dec. 28, who also is president of Wright Aeronautical at Wood-Ridge, N. J. The company did not comment on the possibility that he might move to the New York office.

• **Major Plans**—What major company plans were pitched by the board meeting after which some of these shifts were announced is not yet apparent, but company observers say the news is the beginning of a new, aggressive policy under Paul Shields' direction. Shields, a senior partner of Shields & Co., New York investment house, and has been a director of Curtiss-Wright since Nov. 1. He has been executive committee chairman since December.

With the changes, Curtiss-Wright now has four vice presidents actively with the production of planes. Since consolidation of the Air Division last October, its Airplane Division has not held a press conference for any military reason.

Further significant financial readjustment may be attempted, whether in additional special cash dividends or reduction of capital structure through revision of stock.

• **Financial Life**—In 1947, the company asked for tender of up to 250,000 shares of Class A stock, at \$150 per share. Only 20,585 shares were so tendered and offered. This left 93,719 shares of the stock outstanding.

The rest of the capital structure con-



MAULER PACKS A WALLOP

Class E. North Carolina (ADM-1) is shown carrying 9000 lb. of ordnance, the heaviest aircraft ever moved by a single cargo plane. The unpowered Mauler, dubbed "Mile Mobile" by Navy pilots, is shown carrying three full ton payloads: 12

orders and four 1000 lb. bombs with full ammunition load. Mauler's gross weight with this weight was 23,120 lb. Craft is powered by a 1250 hp Pratt & Whitney Wasp Major engine and has a range of over 2000 miles.

size of 7,412,699 shares of common stock. An additional unit dividend similar to that made last year may be dependent on the common during 1999.

Intentional closures lack in the possible reduction of both claims of stock through the tender method. The company has more than \$100 million in cash and liquid resources, considered in some financial quarters for share that needed for current operations. Such resources might be expected to facilitate a potential reduction in the capital structure.

► **Major Penalties**—With the two agreement changes and pending financial reviews, Conifer Wright will be in an expected beginning position of it choice to initiate negotiations of mergers with other aircraft units.

Official Air Force sources last week from an indication in the number of aircraft manufacturers, and since 1999 Conifer Wright's name has been listed

prominently in speculation on stock news, first with Lockheed and later with Conquest and Northrop Grumman. (WEEK, Jan. 17)

Operation Haylift Wins Praise for USAF

United States Air Force men praise from southern civilians and congressmen last week for its Operation Haylift to save south-eastern snow-bound cattle and sheep flocks in the range land from Nebraska to California—over a quarter of the country's land area.

When the most drastic snow storms within memory hit the area, all efforts of surface transportation were blocked. Fed droppings from USAF planes were the only hope for preserving large-scale livestock among some 2,800,000 cattle and sheep.

► **These Missions**—During the first week of the storm, USAF, improving in its new role, lifted three missions in what later was known as 'Operation Haylift.'

First, it dropped hay seed and concentrated feed supplies into the area from California and Chicago. The area's own stock, like its livestock, for the most part were maintained in snow drifts. Second, it dropped "emergency haylage" of holes of hay to snow-bound flocks. USAF's biggest operation was out of the Tulsa, Okla., Air Force Base from which 17 C-54 "Flying Boxcars" kept up steady runs of flights.

Third, it rolled road clearing equipment into the area. The economic importance of the hay "operation" is obvious. It is one of the nation's largest and a major fraction of the area's flocks. Thousands of flights would have been required daily to blanket the range equine with hay bales. Thus, two, light-weight aircraft, the C-54s, in tandem, saved with snow-fallen, and dispersed over flocking territory. But the fact stands that droppings from the air was the only resource for saving off thousands of flocks. USAF performed at least a ship-day mission, with food-dropping equipment arriving and made possible a series of getting feed to flocks.

Pan American Gets First Stratocruiser

Pan American Airways last week accepted the first Boeing Stratocruiser and flew it to San Francisco from Port land, but service with the long-range, 75-passenger transport is still more than a month away.

The first plane, "Clipper America," will go into operation on PAN's route to Honolulu late in March after extensive new modernization flights. By that time, Pan Am should have more Stratocruisers. The next four planes ordered by Boeing also will go to Pan America the original Stratocruiser customer.

Next on the list is American Overseas Airlines to receive four Stratocruisers for eight sometime in March. Later that month Northwest Airlines is expected to take delivery on its first Stratocruiser. Scandinavian Airlines will get its first Boeing, probably in April, United Air Lines in May, with British Overseas Airways. Cargo tentatively scheduled to receive the first of its order in July.

After initial delivery on its first five planes, PAN is expected to receive five Stratocruisers a month until its order for 28 is filled—probably in September. Boeing now expects to complete delivery of all 57 Stratocruisers on order by the end of this year.



NATIV at rest. Powered by a liquid fuel rocket motor, the missile has been launched successfully several times after initial firing last summer, but stayed 10 mi. altitude.

Missiles Enter Production Stage

USAF to spend \$26 million this year on guided weapons in addition to research; \$28 million budgeted for 1990.

Guided missiles are passing from the development stage into limited production.

Approximately \$25 million will be spent by the U.S. Air Force for guided missile procurement this year. USAF and Navy have approximately \$28 and have earmarked for guided missile procurement in the fiscal 1990 budget also being considered by Congress. This is in addition to research and development funds for guided missile experiments too.

► **Training Missiles**—Gen. Hoyt Vandenberg, USAF chief of staff, says he expects that the \$25 million appropriation this month approved by President Truman would be spent largely for training missiles and launching equipment needed to train USAF missile launching crews and technicians. Earlier Vandenberg had notified that USAF was expanding its first guided missile group into a guided missile wing (twice recently revised of this group).

Legislation authorizing the USAF to contract a \$700 million long-range guided missile group (twice recently revised of this group) was introduced in Congress last week by Sen. Richard Byrd (D-Md.), chairman of the Senate Armed Services Committee.

The pending group would be operated jointly by members of the USAF, Navy and Army.

► **New Missiles**—Air Force also created two experimental missiles which it has

tested successfully during the past six months. They are:

► **Conquest 774**—This is a 32 ft. missile roughly similar to the Conquest V-2 (V-10). It was built at Conquest's San Diego plant and will be put into use as a training missile for USAF missile launching crews.

The Conquest 774 was first fired successfully last summer at White Sands Proving Ground, N. M. The 774 was designed primarily as a test vehicle for experimentation with new launching techniques, fuels, and rocket propulsion systems. The missile will also be used in upper atmosphere research—once it has a potential altitude of 100 miles.

► **North American NATIV**—This test missile is 15 ft. long and was first fired last summer at White Sands. It will be used to test advanced research in the development of control systems and also as a training vehicle in launching drives. It is fired from a rail motor tower and is guided by radio within the tower during the first few seconds after firing. The missile has traveled an altitude of 10 miles during test flights.

NATIV was built by North American at an Inglewood plant.

USAF now has more than guided missile development contracts in the missile industry and has developed military equipment for 17 basic types of guided missiles.



NATIV taken off on test firing. The 15 ft. North American missile is guided in the initial seconds by radio beams.



Next thing to the V-2 that the Air Force has is Conquest's 774—first shot, like the V-2, from upright position without launchers.



Connie Survives Mid-Air Crash

With a 15 ft. gap in the top right side of the fuselage, a Pan American Constellation was last week landed safely at Mitchell Air Force Base, N. Y., after a private plane had plunged into it at a steep climb.

The PNA pilot, Capt. George Knuth, got the plane down without injury to passengers or crew five minutes after the collision. The Constellation was bound from LaGuardia Field to London. Of the 25 passengers, 14 remained the injury the most serious was a fractured PNA Constellation, five left on a left plane, and only one of the other four had definitely cancelled by middle of the week.

The collision occurred at 470 in the afternoon with visibility good. Knuth said a warning that he had just caught a glimpse of the smaller plane, a two-place Cessna, before the impact, and could not determine the direction of its

flight. The two men in the Cessna were killed and parts of the engine and nose section were embedded in the Constellation. The remainder of the small plane fell to the ground.

The Constellation hit the Cessna just off the flight deck, tearing a large hole in the fuselage above the galley. There was no apparent damage to controls, equipment or other parts of the Constellation structure. At midnight, PNA engineers still were undecided whether to dismantle the plane or to fly it out of Mitchell airport to PAA's base at Miami for repairs.

CAR investigators held little hope of determining exactly what caused the collision. They speculated that the pilot of the small plane never lost control of his craft, lost starting, or was in level flight and failed to see the Constellation, which was climbing.

Flow Program

AMC-derived program designed to produce critical requirements.

By Alexander McFarley

DAYTON—Planning for an elaborate license license program which can be rapidly activated to produce entirely needed Air Force requirements on a large scale basis in emergency is the goal of a series of industry meetings being conducted under the guidance of Industrial Planning division of Air Materiel Command.

Overall program calls for a total of 16 meetings covering 60 companies, including the 16 licensee companies and the other manufacturers also are expected to enter the products under license.

New Program—The new program is developed as a result of the experience with license license arrangements in World War II which eventually were responsible for a large part of the total war production but which developed a series of major headaches for the aircraft planning and production agencies before they started rolling.

Typical of the meetings was a session at Wright Armament Corp., Wood Ridge, N. J., attended by representatives of Continental, Jacobs, and Ranger engine companies to study technical problems involved in production of the Wright R-2700 engine. Detailed planning began after engineers of the licensee companies had studied the Wright production methods used in making the

engine and had tested the engine plant, examining parts, etc.

Study Agreements—The licensee companies are required to execute in the other manufacturer a proposed agreement for study and implementation of a license program. Considered in the agreement are such items as:

- Legal rights and responsibilities of both parties
- Engineering control of the product and production changes
- Policy for field service

Lt. Col. W. B. Carter, chief of the authorization planning section of the AMC Industrial Planning division, who is charged with developing the license program, hopes to develop a standardized license license agreement for the program which will be flexible enough to meet various needed changes depending on the product, plant layout, equipment list, flow sheets, parts, materials, etc.

Selection—Plan-Selection of the licensee companies is planned as a cooperative arrangement between the AMC industrial operations and the licensee companies whose commitment to achieve is, of course, essential. Each licensee is expected to furnish a complete and itemized list of responsible engineering personnel for the completion of the study.

Col. Carter says the overall program is aimed at achieving the following objectives:

- Giving a definite pattern to be followed in event of emergency industrial mobilization
- Confusing detailed planning to the point where it is most essential, for the time and needed

Interlocking of end products and of components will be stressed. This

was something that was not always achieved in the wild scramble of the early days of World War II, and it is one of the main reasons why present war is heavy in the early days of the war.

Flow Goal—Basic theory on product changes is that they should flow from the engineering department of the licensee to the licensee. AMC planners see no reason why licensee engineers may not propose product changes also, as long as they are cleared through the licensee's engineering control and do not interfere with interchangeability.

AMC plans are being conducted subject to alterations for the industrial requirements of the other services and the overall allocation of industrial capacity made by the Munitions Board.

Specific licensee license agreements have been held with North American Aviation, Inc., Ingersoll, Clark and Pratt & Whitney, division of All American Corp., Hartford, Conn.

T-H Substitute Affects Manufacturers

The Thomas-Lewis bill for replacing the Taft-Hartley law with a somewhat modified version of the Wagner Act contains the suggestion of employers—including the airlines—who are subject to the Railway Labor Act.

It directly affects, however, almost manufacturers and other employers whose activities affect interstate commerce.

The bill was written under White House guidance and is based on suggestions made by President Truman in his state of the Union message in 1947 and last month. It reports Taft-Hartley and connects the Wagner Act with some amendments.

This is how manufacturers would be affected by the amendments of the Thomas-Lewis bill:

Unilateral Disputes and Secondary Boycotts—These would be under labor practices, but only if they involve disputes between two parties. A union could refuse, for instance, to permit its members to handle products made by non-union labor or to work beyond reasonable limits. But it would be unfair for an AFL union to handle products made by a CIO union.

Unilateral disputes would be decided by the National Labor Relations Board or an arbitrator selected by it, but there would be no consideration against a strike until the dispute is resolved through a court order. An employer who refuses to sign a no-strike test in accordance with a jurisdictional award would be put off an entire labor practice.

Cloud Shop—This would be replaced



TIP TANKS FOR THE B-54s

Now has lifted most tip tanks to the Douglas B-54. Systems to remove its test gear at high speed. The tanks are used to hold fuel burners in a minimum. They are located centrally in the wing plan.

wing plan to increase effective aspect ratio which improves the lift-drag and loading characteristics of the high-speed aircraft. Stability and control tests of the tail recorder conducted at Wright AFB.

in the new federal law. Also, the president has given to some restrictive antitrust shop laws in 17 states would be lifted. The new law would take precedent over state laws in this case for employers who come under federal jurisdiction.

Dispute Notice—The employer, in a 30-day notice, would have to file a 30-day notice with the U. S. Conciliation Service, before either could "bust" or initiate a labor contract. Failure to do so would be considered an unfair labor practice.

Contract Interpretation—The bill declares it a public policy that all contracts under procedure for arbitration of all disputes over interpretation of the contract.

National Investigation—They would be handled along the lines of the Railway Labor Act, with recommendations by fact-finding boards, but no arbitration.

Gain from the law would be the special bargaining rights for small unions, professional employees and plant guards. Bargaining rights held by business under the Wagner Act would be retained.

Unions no longer would have to file with Communist affidavits in order to get membership from NLRB. This clause in Taft-Hartley has had the left-wing CIO unions and helped drive the Communist leadership out of the CIO local at Alfa-Chlorine plant in Michigan.

Republican strategy is to offer many desirable parts of Taft-Hartley as amendments to the Thomas-Lewis bill on the Senate floor. Some unions likely to get it. There's a good chance that the non-Communist clause will be kept and extended to include em-

ployers. Unions may get only limited rights, such as requiring business's union to remain independent of outside firms in order to have bargaining protection.

"Hatchet Job" To Be Investigation Target

Conquest's B-36 long range bomber continued to be the focus of controversy last week.

- New developments
- Revised bomb load of 42 tons was ordered by a B-36 from Ft. Worth and dropped on the Miami, Calif. practice bombing range. The B-36 dropped one main bombing gun on landing at Ft. Worth.
- Presence of an investigation into the reasons of what Air Secretary W. Stuart Symington called the "best hatchet job" he ever saw in Washington, at

lytely executed on the Conquest B-36. • Political status of USAF purchase of additional Conquest B-36s by Symington who tested the aircraft's bomber capabilities of longer range and higher altitudes than any other bomber in the world. He also said it would soon be the fastest bomber in service. Additional observers believed Symington was referring to the B-36 which will have four jet engines in addition to its four Pratt & Whitney Wing Napier turbo engines.

The "hatchet job" to which Symington referred was executed recently by a team of better attacks on the big bomber by radio concentration which referred to it as a "battering club" for fighters. Criticism of the plane had the strongest from USAF generals who, at least in the early stages of test flying the plane, were not impressed with its performance prospects or operational possibilities.

Preparing Disaster—USAF is now preparing a lengthy case history of the Conquest B-36 project which will seek to combat critics of the new plane by making virtually all the facts on the project available to the press. USAF sponsored a press tour to Conquest's Ft. Worth plant last fall to offset some of the rumors then current about the obsolescence of the giant bomber. USAF officials were strongly frank in pointing out that the plane was not a perfect bomber, but it was the only bomber in the world with four engines.

The second bomb load was carried as two 22-ton practice bombs with non-explosive war heads. This was nearly twice the previous bomb load record set by a B-36 last month carrying one of its 27 ton bombs.

Average 120 Mph—The B-36 averaged over 210 mph for the 2000-mi round trip flight. It made its bombing run at a time or speed over 350 mph. First bomb was released at 35,000 ft. and the second at about 40,000 ft. Both bombs were carried internally in the B-36's 55 ft long bomb bay.



CUTLASS ON TAKEOFF

Usually high angle of attack during take-off of Cessna 441's first jet Cessna is shown here as the reversing experimental flight from Virginia, Md., on first

ing of a new country hop in Dallas North-east home for experimental test equipment, replacing the license finally accepted on early test try.



ALASKAN WINTER TESTS

With dog beds loaded in the cockpit, the Air Force F-36 is shown in flight and ground tests at temperatures 30 deg below zero at Ladd Field, Fairbanks.

Alaska, a part of a USAF super-odd winter tests program. The North American built test bed from Los Angeles Airport on the first leg of the trip to the Alaskan base.

PRODUCTION



Sikorsky Adds to Plant Space

Larger, more modern buildings increase production facilities and make possible higher rate of output.

Expansion of Sikorsky Aircraft's production space by approximately 50 percent is a building program just completed definitely goes to show that the helicopter division of United Aircraft Corp. expects to remain in its long-term, come, location for the foreseeable future.

New brick and steel building, 132 x 140 ft. with clear span of 132 ft. houses both helicopter and rotorcraft manufacturing lines, and contains one of the largest and most modern paint spray shops in the country. A new bridge, 132 x 140 ft. adjacent to the production building. It has a 130 ft. clear span with 25 ft. clearance expected to be adequate for any helicopter in production in the next few years. A new pilot study room and flight office, over-riding

ing the Island's Heliport, adjoin the building.

► **Replacement Structure**—Sikorsky's and several several others which hold the main production line are located in an adjoining steel and brick building, 98 x 140 ft. which is a replacement for a brick structure dating back to 1957.

The new construction which took 94,000 sq. ft. added to existing facilities provides Sikorsky with the most complete helicopter manufacturing facilities in this country, according to D. L. Whitten, manager. A straight line flow of materials and availability is now possible with newly improved manufacturing efficiency.

► **Modern Facilities**—Better ventilation, fluorescent lighting, a new medical department, rest rooms and facilities in

accordance with most modern health practices" are now provided.

Architects Albert Kahn & Associates are planning a four-story addition for the adjacent older structure, including parking and new window installations. In harmony with the modernistic design of the new buildings.

► **Six-A-Month**—Sikorsky production currently is centered on its low price P-51 and Whitney Wasp Jr. powered S-51 helicopter.

This model is currently being sold in civilian use, and with modifications to the Air Force and Navy as the H-1G and the H-19. Production is at the rate of six machines a month, but could go much higher if necessary with the new facilities.

Two experimental five-place Navy helicopter designated XH-51, powered with 800 hp. Wright Continental engines and with all-metal rotor blades are currently under test at Patuxent Naval Air Station.

► **S-52 Tests**—A second version of the S-52, two-place helicopter, which was demonstrated last summer by a landing within the Pentagon's Building near at Washington (Aviation Week, June 28) is now at Wright Field, Dayton, Ohio for Air Force tests.

Plans for still larger helicopters at Sikorsky are in early development stages.

Pentecost Out

Harper Pentecost, president of the Hopper-Copier, has been succeeded as president of Hopper-Copier, Inc., by T. B. MacLachlan at Seattle, Wash., who has been identified with the ship building industry of that area.

Following MacLachlan's election, Pentecost submitted his resignation as director and chief engineer of the corporation, but the board of directors has refused to accept it. Pentecost retains a controlling interest in Hopper-Copier Ltd., which is proceeding with development of the one-man helicopter in England. The Seattle firm insists that Pentecost's interest in the English venture is simply as its representative, however.

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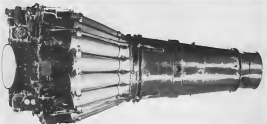
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ENGINEERING



Severe Test Proves Turbojet Reliability

Standard Goblin engine withstands punishing demands of simulated fighter combat operation in 500-hr. run.

Turbojet reliability reached a new high in a recent proving test run in which a deHavilland Goblin 2 completed 500 hr under what is considered to be the most severe test conditions ever devised.

While it has been customary to think of the turbojet engine as its "Maid of All Trades," this British accomplishment shows the new engine with a distinctive identity.

Only two minor changes were made—the burner fuel filter was changed after 103 hr., and a minor accessory drive was replaced after 300 hr.

Theory Underlying Tests—The tests were devised to simulate the actual demands on a typical turbojet in fighter operations. These demands are considerably more severe than those made on the corresponding engine, since the latter spends nearly its entire operating life at cruising speed with infrequent light and short periods of maximum speed operation (takeoff and climb for fast attack).

In contrast, the turbojet engine, particularly in a fighter installation, spends most of its life at near-maximum speed in takeoff, long climbs, maximum speed fast light and high-speed cruise.

It is logical, then, that the test's requirements for the turbojet should be considerably more severe than those for

the conventional propeller-driven engine. It was this consideration that prompted the Ministry for Air, Canada, British Ministry of Supply, to initiate the Goblin test as a 5-adaptor of wartime jet interceptors, covering conditions—constant operation at combat speeds with little or no maintenance between flights.

A standard Goblin 2 was taken at random from the production line and installed in one of the test cells at deHavilland Engine Co., Ltd. at Hatfield.

The engine was subjected to 467 test cycles of 65 min. each, with a 15 min. "idle" between cycles. Each cycle consisted of a standard flight as outlined in the accompanying table.

P-Test Factors—Although the test was simulated, normal altitude temperature conditions were not reproduced with the result that the engine operated at unrepresentative low level temperatures rather than the far more favorable low temperatures of high altitude.

Steady changes in speed and temperature of the turbine, which averaged an average of once every 5-15 min. of running time, imposed extremely severe conditions. The 500 hr. of operation actually required 452 starts, 2771 rapid acceleration, 59 hr. of maximum power for instant and combat, 94 hr. of maximum climbing power

Test Cycle of Goblin 2 Engine

Condition	Time, min.
1 Start and run at ground idling 3000 rpm	15
2 Throttle 3000 rpm with three intermediate runs 1000 to 7000 rpm	50
3 Maximum power idling	15
4 Maximum climb 5700 rpm	50
5 Maximum cruise 5700 rpm	150
6 Combat maximum power 30,500 rpm	50
7 Decelerate 3000 rpm	50
8 Throttle input 3, above 50	50
9 Shutdown for 30 min. standby	300
Total engine operating time	650
Total time at complete cycle	710

and 2098 in. at maximum stroke. The engine burned 161,280 gal. of kerosene and 45 gal. of oil during the period. The tests exposed some weaknesses for completion, an average of 12 flights daily, and dependent on eight morning cruises of the globe.

Replacement of the burner flame and the accessory drive required 15.2 man-hours, the least maintenance of the entire operating period.

By comparison, the Royal Air Force expects 7286 man-hours of maintenance for every 500 hr. operating time in its reciprocating engines, as a balancing comparison in maintenance requirements between the two types.

Actually, however, several other components would normally have been replaced during that period of operation of the turboprop engine, but this was not done because of time of test.

► **Condition of Components**—Following the grading run, inspection of the engine revealed surprisingly little damage, and most of the components apparently could have continued in operation indefinitely. A study indicated that the cost of parts necessary to

bring the engine up to full air-engine factory standard was only about 10 percent of the total cost of a new engine.

Worn but by the test were the flame tubes, a small number of pistons. One of the tubes actually fractured and a piece of it passed through the turbine and out the tailpipe.

The tubes showed typical barbed-crystallization. Scum was laid, and loomed and still others were little affected, indicating uneven fuel mixing and temperature distribution around the combustion surface.

Combustion chamber casing showed only slight wear from flame tube rubbing.

Compressor dome head experienced carbon deposition but the air holes remained completely free.

Wearers from heavy carbon deposits on the tip of the shroud, but experience indicates that this takes place only in the left of the engine and stabilizes at this point with no additional deposition. Scrap needles remained clean.

As was to be expected, the case primer showed no sign of wear.

Turbine inlet duct assembly containing the nozzle guide vane and diaphragm plate was in good condition after the test. Although carbonized oil deposits were observed, there was a correct result of extensive running.

► **Turbine Stands Up**—The turbine was in perfect shape after the test, the single assembly withstood most carefully throughout. Some blades were tested for the flame tube piece which came loose and passed through the turbine, but otherwise there was no blade fracture, warping or bending. Maximum axial growth of blades was 0.001 in.

The tailpipe, including inner cone, supporting struts and anchoring channel, survived the test without any visible buckling or cracking. This assembly has been a constant source of trouble with other models.

The D-10 Goggles test marks a safe stage in turboprop progress and provides a significant indication of future confidence of this new engine.

With durability no longer a pressing factor, there remains only the solution of fuel consumption problem to widen the usefulness of the turboprop.



FLIGHT DATE NEARS FOR BEARAZON

Bristol Aeroplane Co.'s Bearazon, 140-passenger transport, is now undergoing engine run-up tests at Filton, England, preparatory to test flight trials. Craft's 8 Compressor powerplants are designed to develop 30,000 hp. for thrust. Maximum gross weight is 795,000 lb., span is 210 ft., length, 175 ft. Estimated performance figures:

air: Maximum continuous cruising speed, 250 mph. at 25,000 ft.; initial climb, 600 fpm.; takeoff time 10 in.; 2,000 ft.; speed, 1000 rpm. at 25,000 ft.; land at maximum continuous cruise at 21,000 ft.; bleed air balance on control surfaces not to prevent upset; flaps which could come off in rates hydraulic system.



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More Papers Briefed from IAS Sessions

These abstracts continue *Aerionics Week's* presentation of subjects discussed at the 17th Annual Meeting of the Institute of Aeronautical Sciences in New York, Jan. 24-27, 1949. Other summaries appeared last week.

Some of the papers will be presented in greater detail in future issues.

ROTATING WING AIRCRAFT

Feasibility Development of a Jet-Propelled Helicopter—Ray E. Macquay, President and Chief Engineer, and William E. Davis III, Project Engineer and Chief Test Pilot, Monroville Aircraft Co.

This feasibility analysis compares swept, pulse jet and compressor-bladed jet helicopters with conventional helicopters. The swept rotor is not considered competitive. Pulse and compressor jet types have about the same performance and are superior in load carrying capacity to conventional rotors for endurance up to about 2 hr.

Details are afforded on the Macquay M-14 pulse jet helicopter, its preliminary flight tests and attendant problems.

INSTRUMENTS

Phase Six Computer—Joseph B. McSwain, Jr., Head, Navigation Branch, Avionics Equipment Division, Navy Bureau of Aeronautics.

This study gives details on concept, form, development, and principle of operation of an instrument for determining direction by polarized light from sky.

Mythology of this concept over other direction instruments is that it can be operated in polar regions during twilight with favorable weather. Tests of early models resulted in direction accuracy of approximately 1 deg in the ground and 4 deg in flight.

Sperry Zero Reader—S. Kellon, Engineering Department Head, Flight Instruments, and C. F. Fugate, Engineering Section Head, Electronic Equipment, Sperry Gyroscope Co.

Fluctuation deals with history, description, analysis, operational testing, and comparison of the Zero Reader with standard flight instruments.

AIRCRAFT DESIGN

Present Status of Research on Bonded-Layer Control—A. E. von Dornhoff and J. K. Loftis, Full Scale Research Division, Langley Memorial Aeronautical Laboratory, NACA.

Survey of present status of research on boundary-layer control devices

discusses possible applications. Reflection of profile drag by the elimination of turbulent separation and by increasing the relative extent of the boundary layer, the accuracy of the maximum lift coefficient through control of laminar and turbulent separation, and improvement of critical characteristics of supercritical Mach numbers by controlling separation following the shock.

Possible improvements in airplane characteristics resulting from these applications of boundary layer control are mentioned along with general lines of future research.

CLOUD PHYSICS

Methods and Techniques for the Study of Atmospheric Nuclei, Clouds and Precipitation—Vincent J. Schaefer, Research Laboratory, General Electric Co.

End result of this research is Project Cirrus (last session of Air Force, Navy and Signal Corps) is strange to such better understanding of various physical processes that control growth, maturity and decay of clouds and particularly, how laboratory conditions can form various features of precipitations.

Highlighted are purely exploratory techniques based on tests and approved procedures in experimental and theoretical studies conducted by research and flight operations groups.

Large Scale Simulating of Stratos and Mesosphere Clouds—Dr. Irving Langmuir, Associate Director, Research Laboratory, General Electric Co.

Analysis gives data from 5 of the 50 flights made under Project Cirrus in photo range equipped B-17, to obtain satisfactory air pressure knowledge in production of rain and snow and to study modifications produced by artificial seeding.

Experiments on the Artificial Production of Precipitation at Wilkesboro, Ohio, 1948—R. D. Conant, R. C. Gault, E. I. Jones, and Ross Cross, Physical Research Division, U. S. Weather Bureau.

Summarized are results of nearly 150 independent experiments made to determine, in reasonable terms, precise cloud forms and economic importance of cloud modification processes in producing precipitation and increasing the usability for operating aircraft.

FLIGHT PROPELLSION

Some Problems Concerning the Three-Dimensional Flow in Axial Turbomachinery—Paul E. Merkle, Instructor in

Aerodynamics, Guggenheim Aeronautical Laboratory, California Institute of Technology.

A simplified analysis of three-dimensional flow in neighborhood of stator or rotating blade row is applied to these problems: (1) Estimation of one half interference of adjacent and neighboring blade rows in a multistage axial turbomachinery, and (2) flow in axial machine operating at conditions differing from those of the design.

Solution for the entire flow field is given for constant loading conditions optimum for mean and outer boundaries, and particularly simple solution follows for a stage considered in an infinite number of similar stages.

Consideration of operation at conditions other than design conditions involves solution of "slant problems"—one where blade geometry rather than blade loading is prescribed. Problem is reduced to solution of an ordinary differential equation for boundary and by satisfying boundary conditions only at trailing edge of the given blade row.

Acoustic Hysteresis as a Factor in Critical Flutter—Dr. C. C. Chagnon, Head of Stalling Conditions—A. Mendelson, Lower Flight Propulsion Laboratory, NACA.

In study of flutter of compressor and turbine blades, investigators have made that unstable magnitudes of aerodynamic forces and moments are same at stall as at zero angle of attack, but that factor magnitudes of these forces and moments are the same, latter condition being caused by lag of aerodynamic damping and restoring forces behind the velocities and displacements at stall, thus giving rise to hysteresis effect. Decrease of critical flutter speed at stall was thus theoretically shown.

Results were applied to given actual, and correlation of experimental and theoretical results was found possible by assuming that magnitude of aerodynamic forces and moments at stall were lag caused effective torsional damping to decrease, thereby explaining low values of torsional aerodynamic damping exhibited at stall.

UPPER ATMOSPHERE

Solar Activity and the Earth's Atmosphere—Donald H. Menard, Associate Professor in Space Research, Harvard College Observatory.

Electromagnetic portion of solar activity can be subdivided into a number of regions, according to wave length or frequency. From standpoint of terrestrial effects, the most important is the X-ray region and most important is the

an isolated energy like black body at temperature of 4,900 deg., amount of radiation to value of about 1,500 A would be almost negligible. However, solar prominence and solar corona produce temperatures ranging from 25,000 to more than 1,000,000 deg. Theoretical study indicates that these sources give off considerable energy in the far ultra violet in form of ionization lines. These ionization are primary ones responsible for ionosphere, ozone, and heating of upper atmosphere layers.

Probing The Upper Atmosphere with Mirrors—Paul C. Whipple, Associate Professor of Astronomy, Harvard College Observatory.

This paper contains account of the upper atmosphere and ionosphere obtained by means of photographic observations of auroras from two stations. Included are brief descriptions of gas and ionosphere, aurora set up in New Mexico and Super-Schmidt camera.

Results cover determination of seasonal effect in upper-atmosphere density, atmospheric density curve to 90 km, and certain helioid results.

Special attention is given to problem of extensive seasonal cycles accompanying every motion observed by radio techniques.

Upper Atmospheric Measurements by Means of Large Rockets—T. A. Ringstaff, Physicist, Rocket-Sounding Research Station, Naval Research Laboratory.

Upper atmosphere investigations have been carried out in several fields in a period of over 2 yr. Accurate altitude measurements were determined up to 70 km, and measured ion accurate measurements up to 120 km. Ambient temperature were determined from variation of pressure with altitude and from ion pressure measurements.

Comparative measurements were made in Cape Canaveral, the technique used, altitudes. Vertical distribution of ozone was determined from spectra obtained by flying ultraviolet spectrographs in the rocket. Rough measurements of electron density were obtained.

The Navy Has a Skyhook—E. G. Denker, Meteorologist, Geoffrey H. Moore, Chief of Naval Research.

Compensatively successful plastic balloons have been developed and are being utilized in broad program of upper atmosphere research. In 52 flights, heavy loads have been carried to altitudes exceeding 70 km. Scientific instruments are carried aloft to collect new information on cosmic rays, biological phenomena, meteorological parameters, etc.

FLUID MECHANICS

Two-Dimensional Jet Mixing of a Com-

pressible Fluid—S. I. Pai, Cornell Aeronautical Laboratory, Inc.

Mixing and divergence of supersonic jet exhausting into a stagnant stream are investigated theoretically. Initially, flow is assumed to be laminar. If velocity is jet often slightly less than that of surrounding stream, along the method of small perturbations and ordinary boundary layer asymptotic, the equation of motion of two-dimensional flow reduces to the form of the equation of heat conduction whose solution is known for any given boundary conditions.

By transformation similar to that used by Van Kerming and Tien, exact solution of the two-dimensional jet mixing of a viscous compressible fluid can be obtained by successive approximations, starting with solution obtained from method of small perturbations.

Cases of turbulent flow are also investigated by means of Reichardt's theory of free turbulence.

Some Recent Measurements in a Two-Dimensional Turbulent Channel—John Lauder, California Institute of Technology.

Examined are detailed measurements of mean and turbulent velocity fields in two-dimensional, fully developed turbulent channel flow, including distribution of velocity fluctuations, correlation coefficients, turbulent scales and mean-squares. Affected are results of measurements in laminar turbulent and Reynolds number effects on turbulent velocity field. Distribution of various turbulent energy terms across the channel is also obtained.

STRUCTURES

Study of Bending Torsion Aero-Elastic Models for Aircraft Wings—Marion G. Lauder, Chiefman, Engineering Mechanics Division, and Yackel L. Lauder, Research Mathematician, Midwest Research Institute.

Measures of arriving at stability factor used for actual analysis of bending or torsion aero elastic systems is outlined. This permits determination of characteristics of various modes of the system at any chosen airspeed. Damping in critical mode increases with airspeed until at least 85 percent of critical speed is attained, it then rapidly decreases to the flutter value of zero. Non critical mode increases sharply increase in stability in proximity of flutter.

Comparison is also made between normal mode characteristics and system response due to forced excitation. Further, usually efforts in earlier collection of approach to a critical state. From this it appears that flutter-tremor testing is best carried out using the forced vibration technique.

Landing Gear Oscillations Due to Un-



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STILL HIGHER PERFORMANCE!

Aerodynamic refinements and added power—44 hp engine gives Ryan Navion more speed! Moreover, new oil-cooled, greater rate of climb and higher ceiling, yet the new Navion retains the same, short landings for which it is famous.



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Over more room, softer seats, many direct refinements... still quieter engine... new heating and ventilation system, help make the classic new Ryan Navion the "lucky bird" in the personal plane field.



NEW MECHANICAL REFINEMENTS!

New nose and engine refinements... more and still better standard equipment... place the Ryan Navion on a plane with the most extensive mechanical refinements. Now you own a Ryan Navion with even greater confidence.

NEW STRENGTHENED BEAUTY!

Inside and out, the new Ryan Navion is looking! More performance, more comfort, more features for all greater peace of mind and satisfaction. You'll give it the "Navion Appeal" when you check all 29 new advancements for '49. Send today for colorized, free literature giving complete details of the 1949 Ryan Navion.

NO OTHER PLANE COMBINES
SO MANY FEATURES SO WELL

Ryan Navion

Rely on Ryan. Ryan Aeronautical Company, 45 Lindbergh Blvd., San Diego 13, California

stable. Building Division—J. E. Wigness, Mechanical Engineer, and Freddie M. Hahler, Stress Engineer, Lockheed Aircraft Corp.

The study shows, theoretically, that unstable (self-excited) shudding, oscillations of loading gear may occur under service conditions. Primary requirement for such oscillations is that coefficient of sliding friction between tire and runway decreases with increasing sliding velocity. Such variation could easily exist for rubber tire on wet pavement.

Consideration of influence of other variables on critical stability of oscillations and maximum amplitudes, loads, and strains that may be reached.

Comparison Tests of Corroded Panels with Clevis Hole Reinforced with Carbon Dioxide Plate—William D. Kroll, Aeronautical Engineer, A. E. McPherson, Materials Engineer, National Bureau of Standards.

Studies were made with and without circular reinforcement of 3-in. central hole in 14-cord sheet piling, 14 in. long, 24 in. wide, and 0.188 in. thick, with radius of curvature ranging from 12 in. to infinity.

Conclusion is that effect of corrosion on stress distribution around hole is negligible, and is opposed that circular reinforcement attached with one row of

nails did not appreciably reduce stress near hole.

Stress distribution calculated from plane stress theory agrees closely with that observed for panels with uncorroded holes. For corroded panels, observed stresses were higher in uncorroded area of sheet and lower in the residual area than stress calculated from the plane stress theory.

Neural Procedure for the Stress Analysis of Stiffened Shells—Dr. John E. Dolan, Structures Research Division, Langley Aeronautical Laboratory, NACA.

Procedure is based on usual assumption of shell stress analysis that shape of the cross section is maintained by stiff bulkheads. Method is general enough to include effects of restraints as well as secondary effects due to restrained warping (usually referred to as shear lag when the shell is loaded grossly in bending, and bending stresses due to tension when the shell is loaded grossly in tension).

Quantities determined directly are: spanwise distribution of axial displacements, and relative rotations and displacements of the cross sections. Nearest approximations defining these quantities are obtained by method of simple beams.

Details of procedure's application to

a simple problem are given, and results obtained from a more complex problem are summarized.

HUMAN ENGINEERING

Display Problems in the Use of the Omni-Directional Range Indicator—A. C. Williams, Jr. and Stanley Rosen, Dept. of Psychology, University of Illinois.

Speed and accuracy with which 18 pilots (16 men and two women, 16 commercial) with instrument rating, and 16 school-of-line (VOR) and 16 school-of-line (VOR) could use readouts of eight different VOR, several series were displayed to solve typical navigation problems were measured. Instrument and airline pilots made fewer errors than non-instrument pilots but there was no significant difference in time scores.

So called pictorial display giving an indication in terms of graphic representation of actual spatial relations involved were significantly superior to readouts of airline pilots. Display pictorial representation in terms of dial readings, needle deflections and numbers. One pictorial display was found to be superior to all others.

Reliability of techniques used was indicated to be adequate. Four members of instrument category had from 10 to 15 errors in results obtained from independent groups.

JUST LOOK AT THESE FEATURES—

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ELECTRICAL CONNECTORS

the Finest money can buy!

Connectors that carry maximum currents with a minimum voltage drop are only part of the many new advantages you get with Bendix-Scintilla® Electrical Connectors. The use of "Scintilla" dielectric material, an exclusive new Bendix-Scintilla development of extraordinary stability, insures resistance to flashback and creepage. In temperature extremes, from -57°F to +300°F, performance is remarkable. Dielectric strength is never less than 300 volts per mil. Bendix-Scintilla Connectors have fewer parts than any other connector on the market—and this means lower maintenance costs and better performance.

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Minimum weight • Pressure-tight • Built-in dielectric • High insulation • High resistance to flashback • High resistance to creepage • High resistance to oxidation • High resistance to corrosion • High resistance to vibration • High resistance to shock • High resistance to heat • High resistance to cold • High resistance to moisture • High resistance to salt • High resistance to acid • High resistance to alkali • High resistance to oil • High resistance to grease • High resistance to dirt • High resistance to dust • High resistance to lint • High resistance to fibers • High resistance to hair • High resistance to skin • High resistance to clothing • High resistance to tools • High resistance to equipment • High resistance to vehicles • High resistance to structures • High resistance to terrain • High resistance to weather • High resistance to environment • High resistance to everything.



Schweizer 1-25—Basic Data

Span	45 ft. 10 in.
Length	20 ft. 6 in.
Wing Area	122 sq. ft.
Wing Area	122 sq. ft.
Empty Weight	1,000 lb.
Useful Load	1,000 lb.
Gross Weight	2,000 lb.
Wing Loading	44.4 lb./sq. ft.
Maximum Stalling Speed	1.60 ft./sec.
Maximum L/D	34.00
Cruising Speed	71 mph.
Flapless Dive Speed	110 mph.
Design Max. Cruise Speed	115 mph.

Schweizer's All-Metal Sailplane

Production plans for 1-25, developed from craft that won national championship, marks rebirth of industry.

Quality production of its new Model 1-25 high-performance sailplane is planned by Schweizer Aircraft Corp., Elkhart, N. Y.

The all-metal, single surface is priced at \$2195 and will be manufactured in production runs of 28 ships, beginning early this year.

The new model was developed from the 1-21, which was the national champion in 1947, and the prototype has already been put through rigorous flight tests.

► **Flow by Champs**—It was the subject of a "fast flight class" in which the leading sailplane pilots of the country tried out the craft and made recommendations.

Among those who flew the new ship were: Tom Johnson, winner of the 1947 MacCready, New Haven, Conn., 1948 champion; Dick Corey, Western, Mass., 1947 winner; John Robinson, Pasadena, Calif., 1948, 40 and '46 champion; and Frank Lebeda, New York winner in 1953.

► **Design Features**—Featuring wing and canopy glass plating in 24X1 AL

clad, 20X16 alloy of 7081 alloy for extremely high strength.

Even with this truly all-metal construction, however, the 1-25 weighs only 175 lb. empty. The ship was designed as a Class 1 sailplane with a design speed of 125 mph. and a maximum design load factor of 5.74, an empty landing high speed.

With provision for 190-hp. pilot and 52 lb. of equipment, the 1-25 has a gross weight of 660 lb., giving it a wing loading of slightly more than 4 lb. per sq. ft.

► **Control Equipment Details**—The metal construction permits added roominess to the cockpit because of the elimination of large frames and internal structure common to wooden sailplanes. The canopy is molded Lucite to fit the contour of the fuselage, providing maximum day.

Area behind the pilot may be used for radio, barograph or oxygen.

► **Mount 500- or 600-psi**—Design of the 1-25 began in 1947, but construction of the prototype did not start until

May, 1948. The ship was completed last July. A. C. Williams is participating in the 15th National Soaring Contest.

Flight characteristics of the 1-25 are said to be excellent. It is claimed to be very stable at the stall and must be forced out of a spin from which it will recover with ease.

It is equipped with a set of spoiler panels for glide control, the control being linked with the wheel bars. A single wheel landing gear is used with retractable landing gear. The wing is fixed and a small rubber ballast ball.

► **Effect of Surplus—Announcement of Schweizer production plans is one of the early indications that the soaring situation is finally moving from the doldrums of surplus inventory gliders.**

Although the situation made early test results on the production industry, it provided a tremendous impetus to the gliding sport by expanding the number of ships and pilots entry, easy to use in a few short months.

The surplus gliders, however, were designed for military applications and thus are much heavier and of course present imposed performance.

As a result, the industry is confident that the design will prove a better design than gliding, a much higher demand for high performance sailplanes than would normally have existed.

HOW WE MAKE AN ENGINEER'S JOB Easier!

First WE WORK WITH YOU to solve your valve problems. Our sales engineers meet with your engineers to discuss your valve requirements. Plans, sketches and drawings are developed on the job as they grow. How WHITTAKER valves may be probably used in your assemblies.



Second WE SPECIALIZE in the design and engineering of all types of aircraft valves. We have patented and perfected more than 175 different valves for the aircraft industry. Our staff of design and research engineers apply their own special knowledge to your valve design and construction.



Third WE EMPLOY only the highest quality materials and processes for the production of our valves. Our special machines and advanced manufacturing techniques provide high production economy and insure the same precision machine work of each valve body.



Fourth WE MAKE OUR own valves for our most important valves. Our activities are designed and organized to insure that we can supply you with valves that meet your specific requirements of the valve, instead of depending on the valve to be made by another.



Fifth WE HAVE built our valves in seven types of construction. Before being used, having all valves are performance tested according to the time as to which they are to be put. Our valves are tested under actual operating conditions for strength, designed clearance, smoothness of operation — your assurance that they will do the job they were designed for.



Now, then, make your engineer's job easier by bringing your valve problems to WHITTAKER — the only manufacturer offering a completely integrated service from concept design to final installation and servicing. Contact our Engineers at Sales Department, Whittaker, Inc., 913 North Carson Avenue, Los Angeles 18, California.

Whittaker

First in design

First in performance

First with valves that we have chosen to improve



Thrust Stand Devised For Better Accuracy

Flight Test Division, Air Materiel Command, has developed a static thrust stand that may boost thrust coefficient measurement accuracy to 0.1/10 of 1 percent.

Secret of the new position lies in mounting of the entire test rig on scales in slightest non horizontal component of thrust is measurable.

• Rule Method—Thrust measurement in flight has presented problems since taking to East because of change. Fastest and most successful method was the use of pressure "tubes" (a series of tiny tubes projecting at right angles from a main tube) mounted in the tailpipe of a jet engine. These tubes measure total and static pressure, calculations from which produce the static thrust value of the engine.

This method is not entirely reliable, they, mechanically, because location of the tube in the tailpipe requires it to high temperatures that often burn the insulation. Also, vibration of the tailpipe frequently forces the tube loose to cause loss of flight. And the tube requires use of sensitive electronic instruments in the plane or sophisticated equipment for ground recording.

AMC sought a standardized method of thrust measurement and calibration so that all engine manufacturers could incorporate the system in plants while still in the factory.

Research indicated that any one engine of a given type can be used to calibrate all subsequent tests for a particular type of aircraft within an accuracy of ± 0.5%. However, such calibration does not provide sufficient information as to thrust in installation losses.

• New Setup—To solve the problem, AMC has constructed a disassembled thrust platform mounted on four elastic columns and carrying a Cor & Stevens weighing cell to indicate horizontal static thrust of the engine-weighing combination. In addition, four C & S weighing cells are used to measure the exact weight of the plane.

The platform rests the engine mounted on the platform and propels the engine into takeoff. At this moment the exact weight of the craft is measured.

The engine is then accelerated and decelerated, measured, performed while weight measurements of the vertical and horizontal components of the thrust and weight are taken. The process is simple enough engine calibration.

The present stand can accommodate lighter aircraft weighing up to 50,000 lb and delivering as much as 12,000 lb thrust. If the test program proves successful, larger platforms can be built for test benches.

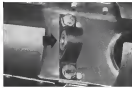


"We Get Smoother Controls and Lighter Construction with Torrington Needle Bearings,"

say Centre Engineers



Bearing always on a good top performance and low operating costs, engineers of Centre Aircraft Company have spent considerable money on safety and dependability. Extensive light-weight design with extra smoothness called for Type AB Torrington Needle Bearings in such applications as the aileron hinge.



Recognizing compact design is the close-up size of the electric hinge in the Centre Model 100. This, in the ball cranks, push-pull valves and aileron hinges, Type AB Needle Bearings provide the ease and light of operation to describe as all smooth and control devices," states Tom Baker, Centre's chief engineer.



"Torrington Needle Bearings also reduce friction in the control system to a low coefficient that then can safely maintain weight," Mr. Baker continues. "The use of Needle Bearing AB controls will extend your run, permit production that last the ordinary service life of the plane."



Where loads are largely static, as in the tail wheel, shock, the full complement of hardened rollers offers maximum bearing capacity and simple lubrication system to ensure good lubrication. Torrington Type DC Needle Bearings provide high axial capacity, and easily handle the shock loads of landing.

The high capacity, small size and anti-lubrication efficiency of Torrington Needle Bearings can be used to improve your product, too. For complete engineering service, call or write the nearest Torrington office. The Torrington Company, Torrington, Conn., South Bend 12, Ind. District Offices and Distributors in Principal Cities.



TORRINGTON NEEDLE BEARINGS

Needle • Spherical Roller • Straight Roller

Tapered Roller • Ball • Needle Rollers

TRUSCON PLANNING BOARD



ABOVE: Truscon models for your consideration of steel building products, including the 40' x 100' x 12' Truscon building, Truscon's best selling model. Several other models with different dimensions and floor plans are available. General Lee Company, Inc., 1000 West 10th Street, Lincoln, Nebraska 68501. Truscon's products are available in all 50 states and Canada.

Lockheed Hangar Building Illustrates Wide Scope of Truscon Steel Building Product Service



ABOVE: A view of the Truscon Structural Steel in the Lockheed Hangar, with the Truscon Steel Roof system, and the Truscon Steel Truss system. The Truscon Steel Truss system is shown in the left. The Truscon Steel Roof system is shown in the right. The Truscon Steel Truss system is shown in the left. The Truscon Steel Roof system is shown in the right.

AT LEFT: One of the electrically operated Truscon Steel Truss Lifts. The Truscon Steel Truss Lift is shown in the left. The Truscon Steel Truss Lift is shown in the right. The Truscon Steel Truss Lift is shown in the left. The Truscon Steel Truss Lift is shown in the right.

TRUSCON STEEL COMPANY
YOUNGSTOWN 1, OHIO • Subsidiary of Republic Steel Corporation

NEW AVIATION PRODUCTS



Handy Sprayer

Compact, portable sprayer for small industrial paint jobs is offered by **Selco Corp.**, 515 Avenue Bldg., at Minnesota Ave. 2, Minneapolis 1, Minn. Complete self-contained unit operates with hand or compressor, eliminating need for hose or separate motor. Total weight is 4 lb., including removable quick connector. Fractional motor operates from 11 1/2 to 2 1/2 in. d.c. at speed of 15,000 rpm., producing over 10 lb. pressure. Interchangeable, flexible nozzle cone or fan shape spray pattern. Nozzle parts are few, simple and access while for easy cleaning. Pistol grip trigger control, and general balance allow easy handling.



Machine Shop Aid

For rapid, easy setup of jobs difficult to hold in vise, adjustable angle plates made by **Chicago Tool and Engineering Co.**, 8103 S. Chicago Ave., Chicago 17, Ill., are offered for drilling, milling, grinding, layout, inspection, and other jobs which would ordinarily require special arrangements. Plates are provided with built-in legs for fastening angle plate to machine table, and eight bolt slots are provided on surface plate for holding work. Adjustment is to full 90 deg. and graduations are given for all angles. Used to ready for instant use by locking support screws. Plates are available in two sizes, 6x6 in. and 9x9 in.

For Cargo Tie-Down

"LoadSet WebLock" for safety securing loads for transportation, is introduced by **Force Auxiliary Corp.**, Barham, Calif. Device can be pulled to desired tension within limits of operation, with no buckling. It provides substantial advantage of 2 to 1, and is reported to offer advantages of saving in handling time elimination of cargo handling, and safety of electric loads through control of tension. Webbing is available with end fittings to accommodate, strap, hooks or lugs.



Petroleum-Resistant Rubbers

Sealastic rubber compounds, **Buna N**, **Hytec** or **Nopacur** lined, developed especially to meet action of petroleum products, are offered by **Sealant Rubber Co.**, 175 Northfield Road, Bedford, Ohio, for lubrication seals, gaskets, hoses, washers, tubing, modified joint seals, and extended cross sections for application in fuel lines, dust cones, filters, chemical, vibration dampers, etc. Reported to have long life and maximum seal under adverse conditions. These rubbers can be applied with tensile strength from 100 to 2500 psi. Chemical resistance from 88 to 98, and elongations from 100 to 600 percent. Various resistant additives will provide weatherproof qualities. Products are stated to withstand temperatures ranging from -90 to 725 F.



Die Transfer Table

For transferring dies from gear housing extended base, die transfer table has pivoting top on strengthened base to provide proper balance when handling dies weighing up to 750 lb. Unit is made by **Reynolds & Reynolds Co.**, 7239 Madison St., Geneva 1, N. Y. Overhanging sections, 14x24 in., serve to bridge gap caused by gear base extension, and for extra reach, retaining bars are provided on three sides of table. Hydraulic elevators in base lift or lower position to 44 in. (high position). Unit has 10x10-in. main top, single speed foot pump, floor lock type brake, 750 psi-dia. steel rollers, and two 5-in.-dia. rigid casters.

Exide

AIRCRAFT BATTERIES

Serve the
skyways with
dependable
power

Exide Aircraft Batteries supply dependable power for every type of aircraft service. In 1947, the first battery equipped plane carried an Exide. Since then Exide engineering skill and manufacturing ability have kept pace with the rapid strides of aviation... serving with batteries of dependability, long life, economy and low-cost maintenance.

Write for copy of Exide Aircraft Catalog, which includes the Exide Battery price and replacement data sheet.



1888... Dependable Batteries for 61 Years... 1949

Exide Electric Co., 1000 E. 1st St., St. Paul, Minn. 55101. Exide Batteries Co., 1000 E. 1st St., St. Paul, Minn. 55101.

SALES & SERVICE



With the four-place Piper Cub, pilot Roger at STPS, the Exide team is better in making an early move to down-

see the growing four-place field. Although it is the four-place plane in use, it perfectly resembles the Piper-Bonanza Voyager

is adding a popular element to the Piper line, and a considerable volume of replacement parts business from 5100 owners in the field.

On the basis of these high performance and high cost for four-place even two-place models and Ryan should again be closely competitor for a large portion of the total dollar spent in 1949 for civil aircraft.

► **Sales Totals**—Summarizing the 1948 personal plane sales were allocated as follows:

Plan	Number	Dollar
Cessna	1671	\$6,705,000
Piper	1479	5,085,000
Wiley	501	1,952,000
Laurel	710	1,949,000
Boeing	678	5,525,000
Acron	999	1,182,000
Ryan	451	1,129,000
TFMCO	512	858,000
Emerson	412	411,000
Yakovlev	105	195,000
Bellanca	49	145,000
Republic Seabee	34	105,000

Lightplane Trend to Four-placers

More than half of 6969 deliveries in 1948 are of four-passenger type: farm and business use increasing.

Personal plane manufacturers delivered 6969 airplanes in 1948, with a total dollar value of \$27,966,000 (at manufacturers' net billing price).

Back to power production levels on a national basis, the year's shipments indicated a continuing rising trend to build four-place airplanes with greater utility for business and rapid travel use. More than half of the total (3567) shipped were of this class.

► **Used Plane Effect**—Effect of the shifted and plane market on new two-place plane sales contributed research in doubling three volume, and in the market, only 61 two-place were sold as compared to 144 four-placers.

The second noticeable year the Stinson Voyager (and its modification the Stinson Flying Station) were sold in the opposite direction from the rising year trend when he announced a new \$2995 four-placer, the Clipper. Which was of the other main designers will contest this four-placer field with business, but not yet been subjected. On a basis of last year's press however the nearest competitors were the Piper Pioneer, Cessna at \$3375 and the Acrona Seabee at \$4797.

► **Sales Fight**—Retail volume sales competition for 1949 promises to be between Cessna, 1948's volume leader and Piper, the runner up. Piper's volume rise of Stinson has strengthened that company's position for 1949, in addition good distribution and dealer as well as

when personal plane sales cooled to on perhaps next level demand, the 1948 deliveries had shrunk to 224 percent over 1947's, and 50 percent over 1946's.

► **Revenue Drop**—At the beginning of 1949 two factors seem struggling to turn the tide of personal plane sales—perhaps down—perhaps up. The first is the slowly growing acceptance of 2700 American business line airplanes were sold today's four-placers have some new uses in business. The second is the continuing trend of the personal plane manufacturers to price their planes higher and further out of the reach of the consumer.

Fully conscious of the larger market potential a four-placer plane, Wiley's L-1 Piper, Se-10, led of the company because the name took a long step in the opposite direction from the rising year trend when he announced a new \$2995 four-placer, the Clipper. Which was of the other main designers will contest this four-placer field with business, but not yet been subjected. On a basis of last year's press however the nearest competitors were the Piper Pioneer, Cessna at \$3375 and the Acrona Seabee at \$4797.

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Crop Dusting Code

Washington State Aviation Assn. has proposed a crop duster and operator code setting up minimum standards of pilot experience, plane repair and financial responsibility for commercial operations in these fields.

One sheering duster with an 5800 airplane, a basket with holes punched in the bottom and a lot of unpaid bills can damage the entire legitimate crop dusting industry in this state," Robert N. Ward, executive secretary, said in announcing the code.

He said the association will ask the state director of agriculture to incorporate the code in a legislative crop dusting code, and he said he would be contacted by state and county officials.

Ercoupe Can Be Made Roadable

A lot which permits conversion of a standard Ercoupe to a roadable model has been designed by Warner Holland of South Georgia Flying Service, Valdosta, Georgia.

Smoke-dome flight was conducted recently when Holland flew to Miami's Hialeah Airport, passed locally to show the wings on top of the cabin, and dragged away at 30 mph, down the highway to Opa Locka Airfield, site of the Miami Air American Air Museum. Wings can be raised for flight or detached and stored on top by two people in 20 minutes, Holland reports. The stress joints (being in removal for flight by lifting off from a pneumatically extended pedestal attached at either side of the cabin. The wings attach to the motor section by two bolts on each side at the leading gear strut and the wing tip.

► **No Ground Cooling Problem.**—Maximum length of single ground trip in his roadable Ercoupe is for his latest only 27 minutes, yet designer Holland expects no ground cooling problem. Oil temperatures have never exceeded 190 degrees, with engine operating at 600 rpm, producing ground speed to 35 mph.

Essentially Holland hopes to have a conversion kit which he can market. First he plans additional tests, modifications and checking legal requirements that may restrict road travel. He wants to study cross-wind handling with the wings stored overhead, and try a continuous roller ground for the propeller. ► **Cost.**—Holland expects that the Ercoupe are easily detachable at a point just beyond the leading gear struts. Simplicity of the Ercoupe's ground handling, stemming from its direct mechanical and separate landing gear, is another advantage leading toward roadability already provided in its design.

Bob Andrus, head of Southern Aviation Inc., world through distributor, reports that Holland has discussed the conversion with his organization but is conducting the development independently.

Similar unit mass problems yet to be solved in the development before the conversion could be marketable, but reports progress made by Holland from his at quite positively. Among the problems:

► **Meet state highway requirements** set a maximum width of vehicles at 8 ft. Tailgates of the dual-wheel Ercoupe are 8 ft 3 in.

► **Friction guard** as now designed does not adequately secure a wheeling bike to prevent a person from falling into the propeller from the front.

BRIEFING FOR DEALERS & DISTRIBUTORS

► **MAKES SPINNERS EXCEPTIONS.**—A statement which makes sense but may be hard to sell to the aviation industry is the suggestion of Bob Sanders, head of the world Ercoupe distributor organization, that the pilot approach in changing regulations concerning spin requirements would be to make any spinnered airplane the standard for a license for a private pilot, and then require the pilot to have an additional spin rating if he is to fly in any spinable aircraft.

Sanders believes that proposed elimination of spin tests from private pilot tests should be accompanied by wingtip and recovery instruction.

► **REDUCED RATE EXPERIMENT.**—Bernard Bellows, operator of Buffalo (N.Y.) Marine Airport, is planning a new reduced airplane control rate experiment when he resumes operation this spring. He hopes it will bring him enough additional business to more than break even on the low cost cost. Bellows proposes to rent two planes in the 67-67 by class for 1 flat 5 cents a mile.

This will average between \$3.50 and \$4 for solo time in a single standard plane rate in his area of 55 to 52.50 an hour solo. For dual instruction he will usually add the instructor's flat fee of \$3 an hour to the airplane rental, as is current practice on the 58 and \$6.00 an hour. An average rate at each approximately \$75 an hour and to get enough time for a private pilot license (10 hr dual plus 30 hr solo).

Bellows' plan would make the cost about \$190. "I am concerned I can operate at their rates and make money. If I make a profit of a couple of a cent a mile and have 50 percent flying, I will have a profit of 1 after 5 cents a mile and have only one plane in the net," the Buffalo operator says.

► **AEROMATICS SALES TOUR.**—(6) Felix, manager of Aeromats Properties department of Koppert Co., Inc., has started three factory sales representatives, George Levin, Dick Andrus and Dick Rose, from Baltimore home office to compare airplanes on a two-month national sales tour, in which new distributor appointments will be signed to replace former factory dealer agreements.

New plan calls for increased distributor discounts "with the majority of the income being to the factory." A new agency for the Aeromats property, a "Stress-Centre Control" which gives a pilot an airtight control of engine speed and performance when desired at high altitudes, will be offered as an optional extra.

► **FOUR-PLACERS GET STALL INDICATORS.**—Installation of Safe Flight Stall Warning Indicator will be standard on all four-place Pipercraft aircraft this year. The instrument was originally standard on the Stearns Voyager and Stearns Flying Station Wagon, which are now part of the Piper line, and the instruction are added to the 1949 Piper Family Clipper (PA-16) and the new four-place four-place the 1949 Piper Clipper (PA-16).

► **EMPHASIS ON FOUR-PLACERS.**—Despite the fact that William T. Piper has sold more two-place than airplanes in the airplane business he is now concerned that the future of the general plane business is in the four-place field.

In announcing the Clipper, the Piper organization called it "an important addition to the most toward central direction from the market of most two-place aircraft except those for training, agricultural or certain industrial purposes."

It is pointed out that the four-place costs less than many two-place planes currently on the market and achieves the extremely moderate (for airplanes) cost of \$750 a seat. When it is considered that the Clipper sells for only about a third more than most new automobiles on today's market, the Piper people offering taken on new aircraft.

► **NEW MANTLAND STRIP PROGRAM.**—Muhlenberg Harber Co. has approved a \$175,000 program for further improvements of the department. Mantland strip, which will include an administrative building, approach road, utility, drainage and a sewage pump.

Applications will be made to get \$75,000 of this amount from the federal airport program, and state airport aid is also expected.

—ALEXANDER MCGURLEY

PLANE The T-38, manufactured by North American, Inc., was an industry-wide competition for an all purpose Air Force training plane to prepare pilots for high-speed jet aircraft. Top speed, 392 mph. Service ceiling, 31,650 ft.



ENGINE The Wright Cyclone TBA, an 800-horsepower aircraft engine developed by the Wright Aeronautical Corporation for the T-38 and other military trainers. On its crankshaft and at the propeller thrust levers are **SKF** Bearings.

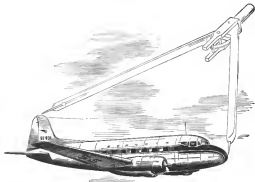


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AVIATION WEEK, February 7, 1949

FINANCIAL

Carrier Credit Aided by Dividends

Bright outlook for earnings helpful in restoring basic values for common and preferred equities.

Airline credit has been strengthened by maintenance of regular dividend payments on preferred shares of three major carriers—American, United and Northwest. Such dividend action in this season cheered investors for the period ahead.

This past winter was particularly crucial for the industry and considerable doubt was evident as to the continuation of dividends in these seven equities.

The bright of momentarily muted around dividend declarations came in the closing months of 1948. Despite somewhat unimpressive earnings, considerable uncertainty prevailed when quarterly action again became due early this year.

► **NWA Dividend**—Probably the greatest apprehensions surrounded the pending dividend action of Northwest Airlines. Despite a December annual of \$500,000 in added paid-up, this carrier is estimated to have lost more than \$2.5 million last year. Nevertheless, the regular quarterly dividend of 23 1/2 cents per share was paid Nov. 4, 1948. Subsequent dividend, due Feb. 1, 1949 also was paid as scheduled.

The relative success of these two cash distributions again hardly was a major factor in influencing the Northwest decision to maintain such dividend payments. With 500,000 shares of 4 1/2 percent preference shares outstanding, such quarterly payments amount to but \$112,125. The preference shares were authorized in April 1947, at \$25 per share and can bear an substantial dividend credit.

The United preferred was issued in January, 1947 at around \$185 per share. It doubt began to appear as to its credit standing, a clearly deteriorative as that year developed with quotations around \$67 per share, representing an estimated yield of about 5.9 percent.

► **Equipment Problem**—Nevertheless, Northwest faces a number of major difficulties before its financial affairs can attain a measure of stability. It is known that the company has been experiencing equipment problems. Yet to come is the introduction of Boeing Stratojets as a regular service. The company's present bank could pay to \$18 million originally was entered to assist in the financing of such equipment. However, this credit is up for renewal in April. One of the provisions in the credit agreement recites that if the Stratojets are not delivered by April, the

banks have option not to extend the loan.

Currently selling around \$15 per share, Northwest preferred shows an estimated yield of 4.4 percent, a measure of its speculative nature.

► **United Preferred**—The dividend action on United Air Lines preferred shares also has been the subject of some concern. The regular quarterly dividend of \$1,325 per share on 74 percent cumulative preferred stock was paid, when due Dec. 1, 1948. This quarterly dividend aggregates about \$106,575 on approximately 35,000 shares outstanding. While no official action has been taken, current market behavior would indicate that the quarterly dividend due Mar. 1, 1949, may be made as scheduled.

Those who doubt such action point to the estimated net loss of more than \$4 million for 1948. It is known also that the company is faced with the problem of assigning financing for its Stratojets that is to be delivered this spring as well as the possible replacement of the carrier's fleet of twin-engine aircraft.

Here too, the importance of maintaining an adequate dividend record is prime in future financial considerations. In addition, against any company's record showing a period dividend is enough to discourage commentators by independent groups of investors at some future time when such support may be badly needed.

The United preferred was issued in January, 1947 at around \$185 per share. It doubt began to appear as to its credit standing, a clearly deteriorative as that year developed with quotations around \$67 per share, representing an estimated yield of about 5.9 percent.

The last annual dividend payment was made in January 1948, at \$1.325 per share. The company is expected to be the same carrier of Northwest Airlines. Issued last year, 83,113 shares of this stock are outstanding. Of this total, 26,398 shares are owned by the Allen Corp. which acted as underwriter for the issue. The Allen Corp. also owns 100,000 shares of the common or 20 percent of the total outstanding. Since its issuance, no dividends have been paid on the North and year around in some appears little in the underlying future.

In the final analysis, improving airline carriers will restore little value for equities, both common and preferred in the industry.

—Sally Altschul

likely. This carried largely in respect to the dividend due Dec. 1, 1948. Once the payment was made, however, and with highly favorable current reports, there was little question about the company's action on the dividend (see Mar. 1, 1949).

American marketed 466,000 shares of \$1.32 cumulative convertible preferred shares in June 1946 with each share privileged at \$102.

Each quarterly dividend on these shares aggregates \$358,000.

After declining to a low of \$47 per share in late 1948 the trader, the American preferred had to a recent price of \$61. At this level price, a yield of 5.6 percent is indicated, showing the best quality among the three major airline preferreds. A significant improvement in American's relative status compared to United is also very apparent. About a year ago there was a spread of almost 50 points between the two preferreds. Currently, this spread has narrowed to about 7 points.

► **Financial Progress**—This is merely a reflection of the strong forward strides made by American in its financial condition. Arguably, replacing its aircraft with all new positive types, the company has begun to reap the advantage of lower unit expenditures. Further no serious financing problem seems ahead for the carrier. It is noteworthy that American not only will report a profit for the 1948 fiscal quarter but is also reported to have been in the black for the month of December. The company's credit position can only help corporate under such circumstances.

A latent attraction in all three convertible is the conversion feature. Convertible into common stock, enhancing speculative interest in addition to their status as equities in periods of rising markets. Much share of Northwest preference stock is convertible into one and one-half shares of common. One share of United preferred has a call in four shares of common. American's convertible is convertible into common at \$21 per share or about 4.6 shares of common for each share of preferred.

The next annual dividend payment was made in January 1948, at \$1.325 per share. The company is expected to be the same carrier of Northwest Airlines. Issued last year, 83,113 shares of this stock are outstanding. Of this total, 26,398 shares are owned by the Allen Corp. which acted as underwriter for the issue. The Allen Corp. also owns 100,000 shares of the common or 20 percent of the total outstanding. Since its issuance, no dividends have been paid on the North and year around in some appears little in the underlying future.

In the final analysis, improving airline carriers will restore little value for equities, both common and preferred in the industry.

FINANCIAL 39

UAL, NWA Want More Mail Pay

New petitions request earlier criticism leveled at CAB by Presidents Patterson and Hunter.

By Charles Adams

Last week's mail pay increases are proving to be no more than a temporary palliative for the air transport industry's financial ills. Prospects are that some of the same time will have to be forthcoming again.

Two of the nation's major carriers, United Air Lines and Northwest Airlines, are in a critical condition: only two months in losing operating losses could. Even companies which finished 1986 in the black because of substantial cost pay hikes are petitioning CAB for still higher and rates to offset rising costs.

Probe Not Undesired — Consistently, some industry executives will voice the possibility that the Senate Subcommittee on Finance Committee will hold hearings on the airline's persisting financial difficulties. The legislative investigation would supplement the Reauthorization Finance Cap's study, results of which were sent to President Truman last year.

BPC explored the types of financing best suited to the air transport industry's immediate requirements and long-term needs. The Senate committee should spotlight the need pay increase.

Cost-Flight Seen in making urgent new plans for higher mail pay, United and Northwest have warned CAB that it not set aside its present inapplicable mission to the carriers. The petitioners stressed. Based fees and were seen recent of substantial rule by UAL President W. A. Patterson and NWA President Cliff Hunter last summer, then they publicly urged the federal agency of intent to carry out their duties properly under the Civil Aeronautics Act.

United has told CAB its "present on demand has a hard, under a CAA personnel immediately to maintain sound economic conditions in the U. S. air transport industry, one permit the financial condition of one of the largest and most important carriers to become more critical from month to month without even writing an opinion." UAL, last May asked for increase of CAA's "Big Five" decision of Apr. 7, 1986, which raised the company's mail rate from about 45 cents a ton mile to an estimated 57.2

cents a ton mile retroactive to the start of the year.

United is now preparing its annual report for 1986. The company says that unless CAB acts quickly the report will have to show accumulated and the public that deficits on shipments are imminent.

Mailation Alleged—Last April's "Big Five" decision intended to fix a mail rate which would enable carriers to show a net domestic operating profit of \$7.62/\$600 per ton-mile before taxes, the carrier asserted. Instead, UAL declared a net operating deficit of \$4,115,719 developed in 1986—a record of about \$12 million.

Company officials said the discrepancy between intended and actual results during 1986 was due almost entirely to CAB's erroneous prediction of future passenger volume. CAB last spring has one first United would fly 1,180,976, 108 increase passenger mail domestically in a "faster rate" schedule, the carrier flew only 1,161,771,000 domestic average passenger miles in 1986.

That the 270,203,000 revenue passenger miles produced for UAL by CAB but never achieved, would have added the company an additional \$12,856,165 of 53 cents a passenger mile. United said the 18 cents a ton-mile rate increase of 10 percent in estimating company expenses but credit by over 15 percent in forecasting passenger revenue.

Higher Rate Requested—UAL has asked CAB for a temporary mail pay increase to 87.2 cents a ton-mile retroactive to July 1, 1984, or 82.5 cents effective Jan. 1, 1984. The 74.5 ton-mile rate would increase the domestic mail pay from \$5,944,569 to \$8,514,439 last year but still would leave a domestic operating deficit of \$1,145,979 pending determination of a permanent rate.

The last two months of 1986 resulted in serious losses for United. Through Oct. 31, the carrier had a \$2,313,756 domestic operating deficit. As of Nov. 30, the carrier had a \$2,313,756 deficit and another of some \$200,000 in December brought the total operating deficit up to \$2,513,756.

NWA Calls CAB—Northwest told CAB that the Board's decision of last December removing the company from the "Big Five" mail rate case and board-

ing its domestic mail payments did not go far enough. Immediate relief in the form of additional temporary mail pay is imperative if transportation of mail, mail and freight relief are to be avoided," NWA declared.

In its "Big Five" decision last spring, CAB tentatively placed Northwest in the same unclassified "service" mail rate class with American, Eastern, United and TWA. Two months ago, the Board took NWA out of the "Big Five" category and boosted its mail pay from about 9 cents a plane mile (50 to 75 cents a ton-mile) to 14 cents a plane mile in order to increase the carrier's revenues by about \$704,000 in 1986.

Revenue Down, CAA's Up—Northwest has now asserted that the new rate actually increased last year's revenues by only \$59,000. The company said that according to its entire fleet of Martin 2-2's during all of September and part of October last fall revenues substantially after account a business failed to come up to expectations. Further, the company is facing sharply increased costs in a result of higher prices for gasoline and materials and sales wage demands.

Company's tentative \$4,115,719 domestic operating loss for 1986 apparently was the impact in the industry. But Northwest's domestic deficit also was due to the \$4 million loss. But Northwest stated that its own revenue services, but these made considerable small debts in the overall loss.

Recent to which United and Northwest were being named domestically during the latter part of 1986 in revenues by Northwest's losses showing the former with a \$1,160,510 operating deficit. The latter with a \$683,116 deficit. Revenues. TWA lost over \$44,590 on domestic services during 1986, and American Airlines lost \$89,010.

Dividing Profits Predicted—Meanwhile, United Airlines, which earned over \$600,000 on domestic operations during the latter 17 months of 1986, is now a net loss of a United mail pay like last fall (American Wings, Sept. 27), is warning about the future. It has told CAB that because of changing costs, the company's operating revenues are no longer sufficient to produce a fair return on its investment.

Revised mail payments (which has declined here a year ago and while there have been increases in fuel prices and other costs higher, they are not keeping pace with rising costs. Besides rising fuel and ground service costs, United called CAB's attention to the expense of putting flight engineers on DC-3s in keeping with a Board rule.

The carrier declared it had reduced its subsidies to the maximum requested with maintaining its competitive position and providing the service supplied by its affiliates.

TWA Skyoach Serves K.C.—L.A.

Aircraft continued to get under way that week when TWA began its low-cost DC-3 flight between Kansas City and Los Angeles for a 90-day trial period.

CAB approved TWA's \$16.90 coach fare over United Air Lines' schedule. The rate represents a reduction of \$13.35, or 36 percent, from the regular 60-cent a mile Kansas City-Los Angeles fare. United Airlines rate between the two points is \$77.30 and reduced coach fare is \$18.60.

Night Flight Only—Washington, the TWA dispatches will leave Kansas City at 10:50 p.m. and 12:34 a.m., arriving at Los Angeles at 6:45 a.m. and 8:33 a.m., respectively. Unstaffed flights will fly Los Angeles at 7:01 p.m. and 9 p.m., arriving at Kansas City at 6:34 a.m. and 8:30 a.m., respectively. Two-minute stops will be made in Wichita, Austin, Albuquerque and Phoenix to replace or replace passengers.

Passengers will learn that unless about the 24-passenger DC-3s, and needs will be available at regular hour stops. Skyoach operations will be made by passengers only at the time they purchase tickets. Roundtrip reductions and lower group fares in effect on TWA's regular flights will not apply to the low-cost service.

Confidential Plan Opposed—Meanwhile, United has protested against Confidential Air Lines proposal to offer 600 domestic tickets between Kansas City and Denver starting Feb. 15. UAL said the fare is 57 percent below current price rates and is unacceptably low, reflecting but 6.62 cents a mile. Current rate of 55.18 is equal to about 3.74 cents a mile.

The contemplated skyoach service over one of its busiest two-level gates is not in keeping with Confidential's policy in a "hard" market, United declared. It added that there are no local differences between Confidential's rates for service and proposed skyoach service. UAL asked that the low fare be suspended pending its investigation.

PAA Sales Up

Pan American Airways' worldwide passenger and cargo mile aggregated a record \$113 million in 1986, up about \$24 million over 1985. The company carried 907,906 passengers during the year.

While C. Laporte, PAA vice president in charge of traffic and sales, says that the U.S. passenger business booked in the U. S. will show a 13 percent gain in 1987.



At Arizona Airways' specially modified DC-3s are well suited to the short hop, dispatch types of freight operations which AAA plans to inaugurate only in March. Further, the photo shows the new-type cargo and passenger doors recently closed. (The telephone on the other bank load permits instant communication as well as integrated sales control.) At top right, a cabin attendant lets down the ramp, which is built into the side door. Below, passengers and cargo are quickly loaded.

AAA To Use Modified DC-3s

Carrier plans suspension of pickup service, activation of 2000-mile feeder system with special craft.

All American Airways, which will merge with the Trans World Airlines system, has set Mar. 7 as the target date to activate its conventional feeder service with specially-modified DC-3s.

The change in AAA's status was first announced when the Civil Aeronautics Board ordered indefinite closure of the pickup service by July 1. Concurrently, CAB asked All American to show its efforts to suspend operations on its 2000-mile feeder system.

Route Overlap—AAA was designated

for regular feeder operations in CAB's Middle Atlantic area design a year ago. The new system in the state general area now covered by the multi-passenger pickup flights which have been conducted with over 3000 and two B-747-100s that the Board had suspended, when the Civil Aeronautics Board ordered indefinite closure of the pickup service by July 1. Concurrently, CAB asked All American to show its efforts to suspend operations on its 2000-mile feeder system.

Investigation of service by All American will bring the number of active feeder to 12. Seven other facilities were designated for certification by

CAB have not yet started operations. They are Wright Aeronauts, Newcomb, May, Price Air Line, East St. Louis, H. Ross airplane Co., Day Motors, Central Airlines, Oklahoma City, Oils, Route Trans Air, American Flight, Inc., Chesapeake, Southern Airways, Browning, Alti, and Arizona Airways. Phoenix Several of these companies hope to overcome financial difficulties and begin service this year.

The Middle Atlantic decision of February, 1948, tentatively awarded AAA three later: Washington/Baltimore to Pittsburgh, Washington/Baltimore to Atlantic City, N. J., Pittsburgh to Atlantic City, Pittsburgh to Buffalo, N. Y., Pittsburgh to Cincinnati and Washington to Wilmington, Del. All airports including a number of intermediate points.

■ **Route Awards** Added to travel on the AAA feeder system, CAB has now added Jacksonville on a showing of adequate airport facilities at intermediate points; a new link extending from Pittsburgh to New York/Penn. The Board also has proposed giving All American a new between Pittsburgh and Charleston, W. Va., on Washington, Cleveland and El Paso. W. Va. AAA had agreed to suspension of its policy with the route, but the New York decision is pending.

In anticipation of the latest CAB decision, AAA recently moved its offices and operating headquarters from Wash-

ington, Del. to Washington, D. C., National Airport (Division West, Jan. 10).

First link to be awarded by All American probably will be from Washington and Baltimore to Pittsburgh on the intermediate points. Other routes are to be opened at about three-week intervals.

■ **Equipment Awarded**—AAA had lost its first set of new specially-modified 24-passenger DC-3 derivatives on hand by the end of January. Douglas Aircraft Co. is modifying the planes to All American's specifications and has been demonstrating them to other carriers during their cross-country delivery flights.

The Civil Aeronautics Board had suspension of All American's service over the nation's cities, conflicting with planning in the public interest because existing schedules are required to keep the routes going despite a device in mail and express handled since the new introduction of the policy.

which include out of Pittsburgh to Cincinnati, Jacksonville, N. Y., W. Va., Tampa, Fla., and Philadelphia, is the list in a series of steps making a call of continuation in CAB for this type equipment.

■ **Picking Service Evaluated**—CAB's decision suspending the pickup service in its routes continued to the street lines in the spring of 1948, when it actually ordered the principle of using street

lanes passenger-picking plans for service to local communities. At that time, the Board saw considerable advantage in the ability of combination plans to pick up and express at points where passengers wanted to combine or disperse.

But in May, 1947, with Post Office Dept. support, CAB instituted an investigation to determine whether All American's pickup service should be discontinued. Several months later, after weighing safety considerations, CAB turned down All American's request to use modified Rec-D (DC) for combination passenger-pickup operations.

CAB Nonsked Power Challenged by Senator

The Civil Aeronautics Board's power to exercise economic control over scheduled airfares has been challenged again by Sen. McCarran (D-Nev.), principal author of the Civil Aeronautics Act of 1938.

Quoting a letter he had written to CAB Chairman James M. Lunde in August, 1948, before promulgation of the current non-scheduled exemption, McCarran told principal Board Chairman Joseph P. McCann (D-Calif.) that the Civil Aeronautics Act never, at any time in its history, contemplated the economic regulation of non-scheduled or fixed base operations.

"The Board now seeks to enlarge its activity without legislative authority," McCarran said, "and I oppose any such assumption with all the force at my command."

■ **Legislation Proposed**—McCarran and CAB succeeded in enacting the non-scheduled flight despite his communications. The Senator added that he is now sponsoring legislation which will, for the first time, give CAB authority to complete certain routes. "For the present," he declared, "I think CAB should stay its hand until Congress—the only body legally authorized to speak—has an opportunity to act on this subject."

The McCarran bill provides that a non-scheduled carrier operating commercially since Jan. 1, 1938, under a letter of authorization from CAB would receive grandfather rights to a new license. The carrier would be authorized to operate no more than three round-trip weekly between the same two points.

Meanwhile, Frederick L. Wilman, manager of Television, N. J., an Indianapolis, is paid an airport operator to join the CAB. He is now a member of the board of the non-scheduled exemption. He said that exemption is a sharp contrast of irregular service would be a severe blow to 1948 or more airports throughout the country and to a similar number of affected suburbs.

Damon Denies Reports Of Personnel Shifts

TWA President Ralph S. Damon has thrown cold water on reports that he might leave some personnel from American Airlines or American Overseas Airlines after TWA when he assumes his new duties Feb. 10.

"These reports have no foundation in anything I have said or intended," Damon declared. "My long-held conviction for the management and people of TWA, for the principles and accomplishments of the organization, is being expressed by the fact that I left a company I had been associated with since 1936 to join TWA."

■ **Improvement Sought**—Damon said he has been impressed recently with the rapid improvement in TWA's operations and progress toward a lower break-even point. He added that TWA has a sound structure and that its working capital position has steadily improved.

"I have been impressed," Damon continued, "that TWA has an intention of selling or otherwise disposing of its foreign routes. I subscribe completely to this policy, which I well know also is the fact of Howard Hughes. I do not believe that non-scheduled carriers should be placed in a company which is a company's interest or a chosen instrument in the public interest."

■ **Losses Reduced**—Damon will take over TWA's management with the carrier's prospects on the upswing. Last year's net loss was approximately half that of the \$4,676,761 deficit reported for 1947, according to preliminary estimates.

TWA's international operations during 1948 opened well in the black as the result of a large unit price increase in November. Domestic operations have been in the red for the past several months and will show a similar loss for 1948 pending determination of a fuel rate hike.

WAL Cuts Fuel, Fares

Western Air Lines last week shortened all food service on its planes and cut fares 5 percent in accordance with the "no need" tariff submitted to CAB for approval more than a month ago (Aircraft News, Dec. 18).

CAB promised WAL's request to become effective for a six-month trial period despite the vigorous objections of United Air Lines, which had asked the Board to suspend the "no need" tariff on any suspension. UAL and Western could not cut costs 5 percent by doing so without cuts. United added that the WAL plan might force UAL to offset a similar 5 percent fare reduction on its own main flights while assuming just

cost items where meals are served. Western announced that meal service would be scheduled along its routes, and passengers will be able to eat at airports voluntarily where they will be served in special tables to ensure orderly service. Language talks between WAL and CAB are in progress. CAB has agreed to review the 5 percent reduction on a monthly basis.

Dispatcher Course

A program to train aircraft dispatchers for airlines will be started this month at the New York University School of Education.

Organized in cooperation with the Civil Aeronautics Administration and several commercial airlines, courses will be offered at the University and LaGuardia Airport. They will total 150 to be in attendance. Class meetings will be directed by Peter Kugler, supervisor of meteorology for American Airlines, and William T. Peris, Jr., training supervisor for Eastern Airlines. The course will be held at the University of the City of New York.

Airline Labor Disputes Increasing

National Mediation Board handled record number last fiscal year; anticipates even more during this year.

Airline labor disputes are occurring more frequently and are taking longer to settle, according to a report by the National Mediation Board for the year ended last June.

With union organization on the upswing among the carriers, it is expected that the high level of airline labor disputes will continue this year. Increasing pressure on operators to meet substantial wage hikes in 1949 will lead to labor negotiations difficulties.

Disputes at Pan American increased to a record number of airline disputes during the last fiscal year—50. This was 12 more than the previous year's record of 38. Pilots made airline labor disputes last year.

United Airlines, NMB during 1948 and 1949 has during all of the previous 10 years the airlines have been referred to the Railway Labor Act which NMB administers.

Airline disputes comprised 39 percent of all NMB mediations during the last fiscal year. Yet the board said 25 percent of its time settling them, indicating they were more difficult than railroad disputes.

The board's annual report also pointed out the increasing tendency of disputes to concern recommendations of wage increases. NMB feels that after all the procedures have been exhausted and in several fact-finding board has made its recommendations.

Air Forwarder Order Set Aside by Court

The U. S. Circuit Court of Appeals in New York has set aside its ruling of last Nov. 17 which delayed execution of CAB's demand granting operating privileges to air freight forwarders (Aircraft News, Nov. 29).

The stay was granted originally at the request of 15 certified airlines which asserted that CAB's demand would injure them by superimposing on the existing air transport system a duplicate system of indirect air carriers which would compete with them as carriers for freight business. Both CAB and the Air Freight Forwarders Association petitioned the court to vacate the stay order.

The forwarders, whose letters of registration had been issued by CAB prior to the court's stay order, will again be able to operate under them as a result of the new ruling. CAB also has renewed its efforts to force forwarders to furnish forwarders letters of registration.



NO SPEED RECORDS HERE

Josephine Cochran, airline woman, after, and her husband, Bennett Floyd B. Cochran, chairman of Consolidated Flight Air Corp. Coy's board of directors, were considered in the CAB decision and intended to the American Airlines Corp. James O'Neal (right) explains the wisdom of the Elkhart train in FAN's LeGuerre Field house. Keesen (center) is the Chairman of the Federal Aviation Board. The Wright-Whitely DeHavilland Flight House line and several last spring. (Aircraft News, Nov. 29).

Way, May 10, the train is a perfect replica of a Boeing Stearman and will be in 1948 operations, refueling, flight and more, the railroad airport as it is possible that the train station the pilot could meet in the railroad flight. The air between smooth or bumpy and big risk, so and now all can be considered of the letter's when Mrs. Cochran was the train through its point.

SHORTLINES

- **American National** Mechanics has intervened in the strike struck by 350 radio and telephone operators, another of the CIO Airline Communications Employees Assn., who are seeking a \$39 monthly general wage increase retroactive to Aug. 1 plus other increases. Present scales range from \$175 to \$280 a month. — Company has declared the dispute quarterly dividend of \$74 cents a share on its \$5.50 share, leave convertible preferred stock.
- **American Overseas**—H. Danforth Shaw, secretary and treasurer, has re-

- signed to become assistant to the president of Genco de Puerto Copper Corp.
- **British Commonwealth Pacific Airlines**—Will place its new sleeper equipped DC-6s in service between San Francisco and Australia and New Zealand about the middle of the month. Flight frequencies will be increased at the same time to provide twice weekly service from San Francisco to Australia and weekly trips from San Francisco to New Zealand.
- **Eastern**—Planned to reorganize service to Rome, Civ., only this month.
- **KLM**—Continued flight rights are now operating between Amsterdam and London, Paris and Stockholm.

- **Mid-Continental**—As part of its interline campaign, the carrier plans to offer 30-50 non-fare-inclusive flights to first class at \$12.55 a rate at several of its stations starting early this spring. Company is emphasizing family plan rates and the holding of group travel by airline organizations, labor associations, military personnel and contact social visitors. — Between Dec. 1 and Jan. 15, MCA planes make 138 landings under weather conditions requiring partial or complete anticipation. At least 50 of these landings could not have been made without ILS facilities, company officials state.
- **Northwest**—Has elected Albert G. McManis of Brookline, Mass., to the board of directors.
- **Northwest**—Is building convertible pitch propellers on its Martin 3-0-2s at the rate NWA ordered late at Holman Field, St. Paul. Company says the move will result in a "breakdown reduction" of maintenance costs on blades and wheels. Recent tests showed 3-0-2s equipped with the new propeller required 30 to 35 percent less distance to stop after landing. NWA's Stratojets will be ordered with convertible-pitch propellers.
- **Pan American**—Michael Rees at Miami has reached a new high of 160 employees, including 1500 mechanics and 500 engineers, inspectors, farmers and other temporary personnel. Continued growth during 1959 is expected. Total PAA personnel in Miami more than 3900, with an annual payroll of \$20 million.
- **Philippine Air Lines**—Planned to start service to Tokyo and Okinawa late last month.

what COLONIAL likes about EDISON FIRE DETECTION



MR. F. R. COVERT, Maintenance Engineer of Colonial Airlines, Inc., when we recently asked what he considered important features of the Edison Fire Detection System used throughout Colonial's DC-4's.

"... have never had a false alarm in flight..."

So says Mr. F. R. Covert, Maintenance Engineer of Colonial Airlines, Inc., when we recently asked what he considered important features of the Edison Fire Detection System used throughout Colonial's DC-4's.

- Points noted as important by Mr. Covert:
1. "A push-button checks the entire system."
 2. "The thermopile units are completely rugged and easy to install."
 3. "Clean grid design features lead to simplicity of maintenance."

"No engine," concludes Mr. Covert, "is in the line available type of protection for new propellers containing one dimensional safety record."

Edison Fire Detection is used on the major U.S. airlines, and is required by the U.S. Air Force for all reciprocating engine installations.



"Days of Mr. Covert's letter will be made with complete"

EDISON FIRE DETECTION

EDISON FIRE DETECTION
Thomas A. Edison, Incorporated
120 Edison Avenue
West Orange, N.J.



CAB SCHEDULE

- Feb. 6—Meeting on Board's investigation of engine failure and subsequent maintenance of its South and Memphis (Cleveland 2113).
- Feb. 10—Meeting on Board's investigation of National Airlines engine trouble (Cleveland 2113).
- Feb. 12—Meeting on Board's investigation of engine trouble on Board's proposed revision of maintenance manual.
- Feb. 13—Meeting to discuss mechanical work and maintenance (Cleveland 2113 and 2114).
- Feb. 15—Meeting in TWA's company auditorium for American Airlines flight attendants service (Cleveland 2113 and 2114).
- Feb. 17—Meeting on Board's investigation of engine trouble on Board's proposed revision of maintenance manual (Cleveland 2113 and 2114).
- Feb. 18—Meeting on Board's investigation of engine trouble on Board's proposed revision of maintenance manual (Cleveland 2113 and 2114).
- Feb. 19—Meeting on Board's investigation of engine trouble on Board's proposed revision of maintenance manual (Cleveland 2113 and 2114).
- Feb. 20—Meeting on Board's investigation of engine trouble on Board's proposed revision of maintenance manual (Cleveland 2113 and 2114).
- Feb. 21—Meeting on Board's investigation of engine trouble on Board's proposed revision of maintenance manual (Cleveland 2113 and 2114).
- Feb. 22—Meeting on Board's investigation of engine trouble on Board's proposed revision of maintenance manual (Cleveland 2113 and 2114).
- Feb. 23—Meeting on Board's investigation of engine trouble on Board's proposed revision of maintenance manual (Cleveland 2113 and 2114).
- Feb. 24—Meeting on Board's investigation of engine trouble on Board's proposed revision of maintenance manual (Cleveland 2113 and 2114).
- Feb. 25—Meeting on Board's investigation of engine trouble on Board's proposed revision of maintenance manual (Cleveland 2113 and 2114).
- Feb. 26—Meeting on Board's investigation of engine trouble on Board's proposed revision of maintenance manual (Cleveland 2113 and 2114).
- Feb. 27—Meeting on Board's investigation of engine trouble on Board's proposed revision of maintenance manual (Cleveland 2113 and 2114).
- Feb. 28—Meeting on Board's investigation of engine trouble on Board's proposed revision of maintenance manual (Cleveland 2113 and 2114).
- Feb. 29—Meeting on Board's investigation of engine trouble on Board's proposed revision of maintenance manual (Cleveland 2113 and 2114).
- Feb. 30—Meeting on Board's investigation of engine trouble on Board's proposed revision of maintenance manual (Cleveland 2113 and 2114).

LETTERS

CAA Copter Testing

CAA is on the left and a continuing study some of the personnel through the course here in preparation for civilian helicopter operations. Considering the small chance, their CAA men are now merely doing good planning on their part.

The May has and about the same time, but not that it is an option for some work at home.

Carl R. Baker, C. Baker
Loren Helicopter Training Group
San Marco Air Force Base
San Marco, Texas

Stratojet Seats

Thank you for... a comprehensive and sufficiently done report on the Stratojet seats. — There is one point that I noticed in connection with the passenger report. We believe it is quite proper to include the 14 seats in the lower deck as part of the passenger capacity of the different airlines involved rather than leave the number on the upper deck only.

It would appear that it is not customary to have a 140-passenger limit, and what will happen is that the seats will be sold on the upper deck and any surplus that are left will be left in the lounge.

Thus, in one of extraordinary traffic conditions the airline could if it wished sell lounge seats not for primary use as the airline seat but the problem of capacity loads by selling seats in the deck over the Stratojet seats would be solved. But normally the would not be the case.

The story states that "To carry a greater number of passengers, the lounge would be utilized with conventional seating." The fact is that the present non-converter seating arrangement that is the base of this lower deck is the best possible utilization of the space so it is not probable that it would be converted to conventional seating. In other words, we feel that our airline you can "have your cake and eat it too." You can have the advantage of an increase in revenue without increasing seating passenger capacity.

HAROLD MARSHALL, Director
Public Relations & Advertising
Boeing Aircraft Co.
Seattle 14, Washington

More Comment on Copters

Please accept appreciation of McDowell Smith Corp. for your very effective editorial, "Let the Copter on Many Copter," Jan. 5. The recognition of the importance of service type helicopters is timely and necessary to the development and production of fully satisfactory service type helicopters.

C. H. HARRIS, Chief Engineer
Helicopter Division
McDowell Smith Corp.
31 Lane 1, Mo.

Service type helicopters have done outstanding jobs considering their design limitations.

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tensioning cylinder head nuts with a Snap-on TORQOMETER

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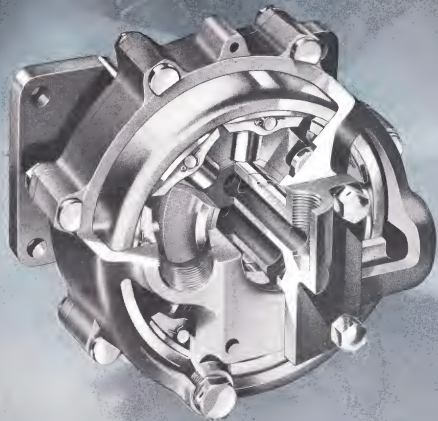
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